THIS WEEK'S NATIONAL PETROLEUM NEWS

The Recognized Authority on News, Markets and Technical Developments in the Oil Industry

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Coming Meetings

1936

Wisconsin Petroleum Association, Plankington Hotel, Milwaukee, Wis., Jan. 7, 8, 9.

Northwest Petroleum Association, North Dakota division, Waldorf Hotel, Fargo, N. D., Jan. 13, 14.

Northwest Petroleum Assoc., Minnesota division, Ryan Hotel, St. Paul, Jan. 16 and 17.

Kentucky Petroleum Marketers Association, 10th annual meeting, Brown Hotel, Louisville, Ky., Feb. 5, 6.

Iowa Petroleum Association, Hotel Fort Des Moines, Des Moines, Iowa, Feb. 18 and 19.

Ohio Petroleum Marketers Association, Hotel Deshler-Wallick, Columbus, Ohio, Feb. 25, 26, 27.

Oil Men's Association of New England, Boston, Mass., Mar. 11, 12.

Indiana Independent Petroleum Association, Indianapolis, Ind., Mar. 18 and 19.

American Association of Petroleum Geologists, annual meeting, Tulsa, Mar. 19, 20, 21.

American Chemical Society, Petroleum Division, Kansas City, Mo., Apr. 13 to 17.

National Petroleum Association, Cleveland Hotel, Ceveland, O., Apr. 16, 17, 18.

Natural Gasoline Association of America, Mayo Hotel, Tulsa, Okla., May 13, 14, 15.

International Petroleum Exposition and Congress, Tulsa, Okla., May 16 to 23.

Pennsylvania Grade Crude Oil Assn., 13th annual meeting, State College, Pa., June 18, 19.

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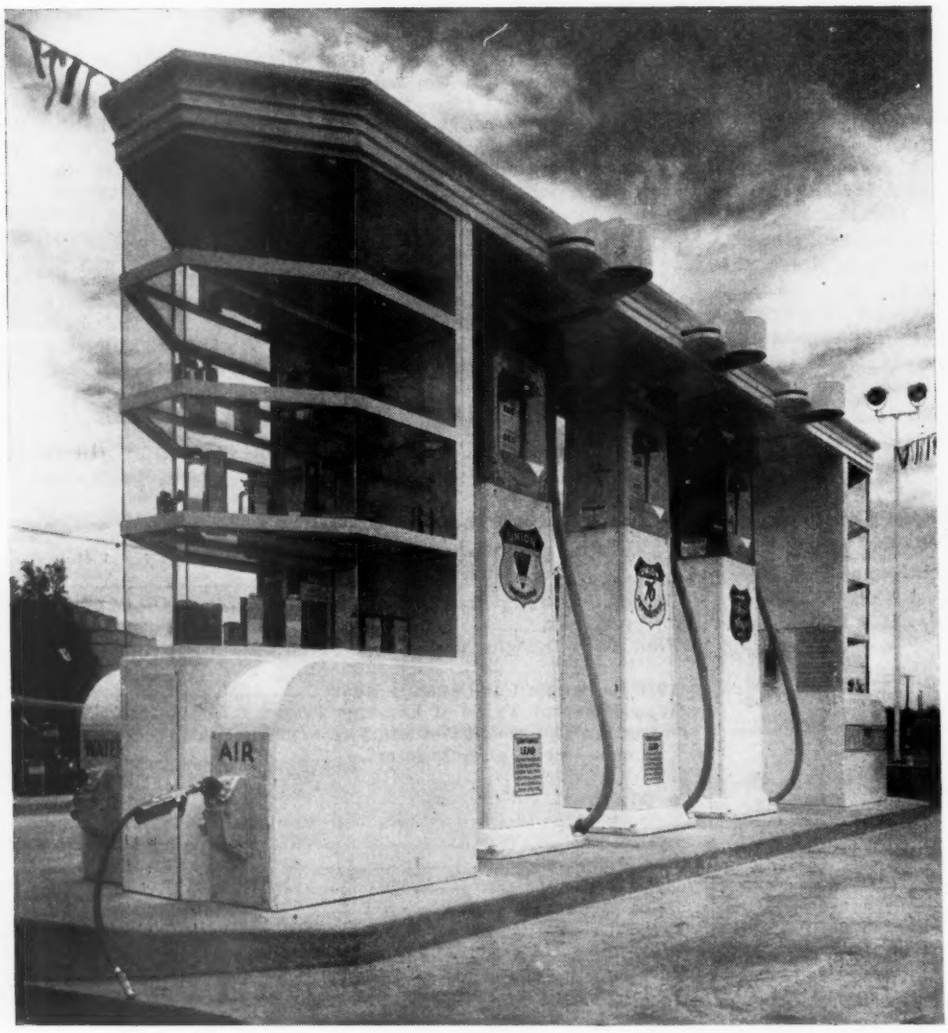

New Island Store Design

Union Oil Co. of California has a unique design for the island store at its service station at Crescent Drive and Burton Way, Beverly Hills, Calif. Shelves in the display cases are glass so that lighting is facilitated. Lighting of the area immediately surrounding the gasoline pumps is increased by the lighting units built into the canopy connecting the two display cases. Both air and water are available at the island.

NATIONAL PETROLEUM NEWS

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Oil Companies Not Represented at New NRA Labor-Industry Conference

By A. M. Petty
N. P. N. Staff Writer

WASHINGTON, Dec. 10

THE oil industry has ignored the industry-labor conference called here today by Co-ordinator Berry to discuss legislation to replace the NIRA which was "killed" May 27 by the U. S. Supreme Court.

Upwards of 5000 invitations to the conference were sent out to representatives of industry and labor. Not a single acceptance was received from the oil industry, it was stated officially at the NIRA. Several oil men attended as "observers" but only one registered as far as could be learned. He was Walter Jones, representing the Benedum-Trees Oil Co., Pittsburgh. However representatives of labor unions with membership in the oil industry were on hand.

Many industries and trade groups flatly rejected Berry's invitation. Following the riotous general meeting Dec. 9 many industry representatives packed their bags and went home. Quite a few group meetings were adjourned without action by those attending because they were not "representative" of the industries involved.

The labor unions, which were heavily represented, went ahead with their group meetings, drafting programs and appointing delegates to meet with representatives of management.

Despite the fact that representatives of industry had withdrawn, leaving the field, in all but a few instances, to the labor representatives, Co-ordinator Berry announced his intention of going ahead with plans for setting up an industrial council. This council will serve as a channel to submit to the government the recommendations of the conference regarding federal legislation.

Labor unions in the producing division, including the oil workers' union, represented by Harvey C. Fremming, its president, are meeting again this afternoon to whip their recommendations into shape. It is understood that this union group will urge enactment of the 30-hour week law, the O'Mahoney bill to license all industries engaged in Interstate Commerce, and legislation to provide for minimum wages and maximum hours of labor.

The general meeting ended in a near-riot when Co-ordinator Berry refused to allow John W. O'Leary, former president of the Chamber of Commerce of the United States and a prominent delegate, to speak from the floor. Berry attempted to adjourn the meeting into group meetings immediately on conclusion of his opening speech.

A. P. Haake, of Chicago, representing the furniture manufacturers, vigorously protested Berry's action.

He urged the election of O'Leary as permanent chairman of the conference. This nettled Berry who charged that Haake had been sent to dynamite the meeting.

Haake shouted "liar." Berry retorted: "You are another, and if you come on this platform I'll make you eat it."

The meeting was in an uproar, with the labor delegates booing. Berry kept insisting that the meeting was adjourned and finally the hall emptied.

During the afternoon group meetings were held but many adjourned without action as those attending decided that the small number present was not representative.

Petroleum was listed in the agenda of several group meetings, but was set off from the other topics by dotted lines. Several other industries, including coal, alcohol, banking, and public utilities, were likewise listed on the program.

At the conference headquarters an official explained that "so few acceptances had been received from these industries that they were bracketed with general groups in case any rep-

resentative showed up." No acceptances were received from the oil industry and no representative appeared, it was said.

A check of the group meetings Dec. 9 disclosed no one present representing the oil industry. At one group meeting an NRA official said that oil, coal and similar industries in the "dotted line" class were not included in the round-table discussions because these industries "are covered by other legislation."

The American Petroleum Institute some days ago declined to participate in the conference. Some elements in the industry, favoring special federal oil legislation, stayed away because they are opposed to bringing the oil industry under general legislation.

Group meetings of labor organizations were held also. Listed as participating in these were the International Association of Oil Field, Gas Well and Refinery Workers of America and the Gasoline Service Station Operators' National Council. Phil Hannah of the station operators' union in Cleveland was registered.

At the group meetings there was passed out a mimeographed statement by Co - ordinator Berry listing 13 proposals "for such consideration as the groups may choose to give them." He emphasized, however, that he was merely offering a summary of proposals received from management, labor and consumers.

Briefly, these proposals were:

Liberalization of the Federal Trade Commission Act, enlarging the Commission's powers to meet fair trade practice requirements and establish wage and hour standards; enactment of a maximum work-week law; enactment of the O'Mahoney Bill to license all industry engaged in interstate commerce; modification of the anti-trust laws "for a variety of purposes"; plans for a government subsidy to increase employment; effect of imports on domestic production; encouragement of new industries to absorb unemployed workers; examination of taxation question and its relation to unemployment; establishment of a periodic census of unemployed; and a national program for training skilled workers to meet growing shortages in some employments.

Establishment of a national industrial organization representative of labor and management, deriving its authority from similar state organizations, to concern itself with Federal and State legislation and the coordination of such legislation.

Consideration of the practicability of allocating the unemployed to industries on the basis of normal employment.

Establishment of an industrial council, sanctioned by the Federal government, made up of representatives of management, labor and consumers, whose purpose will be considering and formulating industrial policy and promoting industrial co-operation.

Cross Country Freight Service Begins

CHICAGO, Dec. 10.—The oil industry's products again are to aid the speeding up of transportation, this time in bringing the East and West closer together on freight when the first transcontinental motorised freight service starts this week.

The Keeshin Motor Express Co. inaugurates the new service and the first fleet of five new motor units will leave Chicago, December 13, loaded with freight for Los Angeles.

With the new service in effect freight is to be transported from Chicago to the West coast two days quicker than by rail. Freight from the West coast is to be laid down in New York on the seventh morning, three days faster than railroad service.

A newly equipped fleet will be placed in service. Equipment will consist of five specially built streamlined trailers from the Fruehauf Trailer Co., and five new tractors of different make. The trailers will carry 19,000 pounds of freight each.

Engineers from the truck, trailer and petroleum companies will accompany the fleet. Truck cabs do not have sleeping quarters, so a sleeper bus will join the fleet for the inaugural run to accommodate the party.

After appropriate ceremonies in Chicago the morning of December 13, the fleet will move westward, scheduled to arrive in Kansas City, early December 14. The trip will be completed over the southern route through Hutchinson, Pueblo, Santa Fe into Los Angeles.

Predicts Big Oil Burner Opportunity in 1936

BLOOMINGTON, Dec. 7.—"The oil burner industry is faced with the greatest opportunity in its history for 1936," reports C. U. Williams, president of the Williams Oil-O-Matic Heating Corp., Bloomington, Ill., in the annual statement issued this week.

The oil industry during 1935 became more active in promoting the automatic heating idea, Mr. Williams pointed out. Specific mention was made of the oil heating advertising campaign in Chicago. Other factors tending toward increased sales which he mentioned include:

Boiler companies have designed special oil burning boilers.

Warm air furnace manufacturers have given their cooperation in designing their product so that greatest efficiency and satisfaction are obtained with an oil burner installation.

Merchandising organizations of the highest caliber are eagerly seeking dealerships.

Model home shows throughout the country have stimulated interest in automatic heating equipment.

Natural Gasoline Production Increases

WASHINGTON, Dec. 9.—Daily average production of natural gasoline in October totaled 4,842,000 gallons, which was the highest since December, 1931, according to the Bureau of Mines. Reflecting a brisk demand, stocks dropped from 215,586,000 gallons to 184,124,000 gallons during the month.

The Editor's Viewpoint

Intolerance for the Views of Industry

By Warren C. Platt, *Editor*

THE fiasco of the New Deal's industrial conference, which opened at Washington Monday will undoubtedly be accepted by the members of the oil industry as full confirmation of the wisdom of the leaders of the industry in ignoring the conference. Not a single oil man appeared, according to all information, not even incognito.

The New Dealers seemed to have called the conference without consulting with industry; business men were not given a chance to voice an opinion as to whether the conference would be advisable or worth while. As in many cases before, the New Dealers decided that such a conference should be held and insisted that their decision and decree were not open even to discussion.

One striking feature of all dictators, and of all those who aspire to dictatorship, is their intolerance of any opposition, or adverse comment on their plans and acts. The more power such people have the less advice and opposition will they permit, if they can help it. The New Dealers have, from the start, shown an increasing leaning toward this intolerance, even the Chief New Dealer himself. Judging from some of his latest speeches his intolerance has not grown less, but rather increased. Those who oppose him are being reviled and probably shortly will be read out of the country for treason.

The oil industry has had much experience with the intolerance of the administration as shown by ex-Dictator Ickes and many of his associates. Ickes has talked about freedom of speech and freedom of assemblage but he flies into a fine rage when any one undertakes to exercise that freedom, guaranteed by the Constitution, to criticize or oppose anything that Ickes wants. The only freedom of speech Ickes wants and permits is adulation of himself and his plans. Ickes muzzled the old P. & C. Committee the while he made speeches about the need for full and free discussions of all problems in this country.

The New Dealer general who called the industrial conference, despite the advice of most business leaders, showed all the traits of an Ickes and the rest of his crowd, at the opening session Monday when he refused any contrary discussion and then proceeded to lose his temper and tried to get down into the gutter because some American citizens thought they had some rights under the freedom of speech clause and wanted to exercise those rights. This New Deal leader did not seem to cool off much when evening came for he was still damning all opposition in a radio talk.

Take a look at this so-called industrial conference and listen to the New Dealers reviling all critics and then pause and consider how you would like them and their kind to run your business, which is what they all want to do of course.

Adopt Successful Retail Store Methods

MORE oil companies are modernizing their marketing departments by putting them on a profit-and-loss basis, even down to sales divisions and, in one or two cases, of sales districts. But the number is small and the job, at best, is none too well or thoroughly done.

Most of the companies are still talking only gallonage to their sales departments and hiding from them the fact that these sales departments are costing the company millions of dollars a year in losses. Over all this mess the major companies are still hopefully holding an umbrella of wide margins, so wide that they are successfully and profitably cut by many competitors and the co-ops and the dealers.

Facts to support these statements keep coming to light all the time. The writer has talked to the chief executives of some of those companies that have their sales departments on a true profit-and-loss basis. They report that, after the new system had gotten into operation, it worked to clean out the dead wood, to close the more unprofitable operations, to make the sales executives study their territories and get more intensive work for gallonage in local stations; and, in the main, to begin to drag their sales operations a little way out of the "red." The profit and loss in some cases was based on the open tank car market, in others on the same margin granted jobbers.

Two of the largest companies have their retail sales departments incorporated in separate companies, the Standards of New Jersey and California. It would be

interesting to know what their books show. While this information is not published it undoubtedly will be only a question of time when it will be made public, if not voluntarily by the companies then through some government investigation. That these two big companies have been operating on this basis for quite some time, however, whether they run these subsidiaries at a loss or not, shows that their thinking and practice is in the right direction.

Perhaps it would be fair to assume that reports of the Colonial Beacon Oil Co., Standard of New Jersey subsidiary in New England, are indicative of other Jersey marketing operations. Colonial Beacon has not reported a profit in the past five years and in 1929 the profit of this forty-million-dollar concern was $247,615.

IF THE marketing subsidiaries of the California and Jersey companies are running at a loss today, the constant recurrence of those red figures on the company report cannot help but be an irritant to the higher executives and cause them to keep bearing down harder and harder for a better performance. It will also be an ever constant criticism of their own work before the eyes of the officers operating these subsidiaries. No man of any sense and ability is going to remain satisfied and meekly accept weekly proof that he is operating a company unsuccessfully, no matter what the reasons are. Dollar losses are not and never will be accepted by the world at large as chevrons of success.

The right kind of a marketing subordinate wants to operate at a profit and to know that he does. He will not be afraid of seeing "red" figures if he is given a chance to do something about them. We ran into such a one not long ago. His company bookkeeping does not permit him to know his exact status but by figures of his own he has arrived at some idea of where his activities stand and they are all greatly in the "red."

As the company will let him, he is paring down rentals and closing service stations. Since all the companies have been leasing out stations he has been allowed to do that. By careful selection of his men and following them up he has been able to make a better showing—also by silently permitting them to cut prices to get business which practically every other lessee of a station is doing anyway.

This man is not afraid to work and he has ability as well as energy. He would like to be put on a profit-and-loss basis and paid on that basis, providing the company gives him some freedom of action. Giving him freedom of action, even though it means price cutting, can hardly be considered a crime these days as every one knows that the dealers, both old and new, are cutting the present foolish price structure down to somewhere near where it ought to be, just as was done during the days of the unlamented code. Since the coming of the chain store tax on gasoline stations and the growth in leasing, price cutting has spread.

But this particular big company subordinate has a lot of past errors of company judgment to overcome. Too many stations are on too high a rental basis, the value having been determined during the days of fancy real estate values. Too many stations have lost or never had enough gallonage. He has one station where each gallon of gasoline sold is costing him a loss of 8.57 cents per gallon as the station expense. To this must be added the cost of the gasoline, freight, advertising and general headquarters overhead which would bring that loss somewhere around 15 cents a gallon at least.

Another station is losing 10 cents a gallon which would make the total cost to the company about 17 cents and a third is the prize with a cost above expense at the station of 14.7 cents which would give the company a cost of 21 cents at least for every one of the 15,000 gallons a year sold from that station. At no station does his net recovery at the station bring anywhere near the laid down tank car price of the gasoline.

Without counting the cost of the gasoline two-thirds of the stations managed by this man are losing so much money that the loss will run well over $2000 a year per station without counting the cost of the gasoline. And this is a well-run company, however well fortified with production and pipeline transportation savings.

THE hopelessness of trying to get anywhere on present price structures and present policies is clearly shown by referring to the report on marketing facilities made by the Petroleum Administrative Board at the request of the Cole Congressional Committee which investigated the industry last winter and spring. One-hundred-and-five oil companies gave the P. A. B. detailed figures on gallonage and investment at different classes of stations. Of these companies 35 were major companies, being all but two of them, 56 produced and refined gasoline and 14 were jobbers who distributed only.

This report disclosed that these 35 major companies had, of July 1, 1934, 10,440 service, company owned and company operated, stations that did less than 5000 gallons a month each. Certainly no one would claim that any of these were being operated at anything but great losses. The average value on the books of these companies of all of their stations, good and bad, was $15,740. That means that these 35 major companies had $165,000,000 invested in stations that did and could not do anything else but lose them a lot of money. If these stations averaged, say, 3000 gallons a month each and lost an average of 5 cents a gallon, which may be considered conservative, the total loss to these 35 companies would be more than $1,500,000 a month. Interest at 6% on the investment alone would run 2.62 cents per gallon.

But this is probably not all of the troubles of these 35 big companies. They owned and operated on that date 9127 stations that did between 5000 and 10,000 gallons a month. Most of these, and possibly all of them, were losing money. Their investment represented $144,000,000. All told these 35 majors had about $300,000,000 invested in unprofitable stations

with losses that would run a few million a month, to say the least.

We realize that general averages are not fair always but we think that, in the main, these figures are fairly representative of the marketing picture as it was at that time. The only change since is due to the companies having leased out probably most of those unprofitable stations. Since then the lessees undoubtedly have built up some gallonage by cutting the wide dealer's margin, taking business from some one else and getting their share of the increase in gasoline consumption the country over.

The Independents did not fare any better in the P. A. B. report but the number reporting was small. Their figures showed that 60 per cent of these 14 Independent jobbers' stations were then doing less than 5000 gallons a month against 43.94 per cent of the majors. However these few Independents had held this percentage for some years while the majors had increased their percentage of small stations from almost 32 per cent in 1930 to the 44 per cent in 1934. Also these Independents had two thirds less invested in their average station, only $5672 per station.

It is too bad that the P. A. B. did not get, or was unable to get, the break-down by gallons per month of the 180,047 non-company owned but 100% supplied stations that the majors reported. There, of course, is where the small average gallonage per month for a large number is ghastly.

The general retail store field is regulated entirely by competition. That is a hard cold blooded policy but it is effective. The companies that survive it make money and render a real service to the consumer. We have heard no demand from these stores or from the consumer for the government taking over the general retail field these past two years. The battle of prices, which regulates the margins, has been in full public view and the public seems to be satisfied that it is getting a fair deal. There are a lot of fatalities in the retail store field. It is not child's play. But it works to efficiency for the consumer and efficiency for the stockholder. A great deal of money is made there and the oil industry could well take a page or two from its book of policies.

It has long been our opinion that the A. P. I. might invite some retail store experts to look over the oil industry's retail field and comment. One thing such experts certainly would do would be to urge putting every sales activity on a profit-and-loss basis and let the persons responsible for such activity know the figures and be paid on the results. Every department in a well-run retail store operates on such a basis, even to its own balance sheet. It is charged with every conceivable item of expense possible, even to its use of show windows and the inches of advertising space it occupies each day.

When a department cannot show a profit and a real one on this basis, then the executive committee wants to know why and it does not use any too much patience nor sympathy in finding out. The committee does not hesitate to change buyers and merchandise and methods to make the department pay and if it can't pay it is closed out fast. The loss that store restaurants generally show is the subject of many a heated battle in many an executive committee; that such loss should be charged up to "advertising" expense is not sufficient for many a hard boiled store executive.

It would appear that with all the experience that is before the oil industry in the retail store field, the industry might well consider adopting some of its more successful policies.

October Gasoline Output Breaks All Records

WASHINGTON, Dec. 9. — Production of motor fuel in October totaled 41,862,000 barrels, establishing an all-time record, according to the U. S. Bureau of Mines. This was accompanied by an unexpected spurt in gasoline consumption.

Domestic demand for motor fuel in October totaled 41,401,000 barrels. With the single exception of August, 1935, when domestic demand reached 42,901,000 barrels, the October figure was the highest for any month in history. It represents an increase of about ten per cent over domestic demand in the preceding month of September and a similar gain over October, 1934, according to the Bureau of Mines' report.

Domestic demand for motor fuel for the first 10 months of 1935 totaled 362,866,000 barrels as compared with 341,527,000 barrels for the corresponding period of 1934. Total domestic demand for petroleum and petroleum products in the 10-month period was 809,164,000 barrels as against 760,417,000 barrels in the same period last year.

Crude production averaged 2,843,900 barrels in October, which is 40,300 barrels above September and the highest since October, 1929.

Stocks of finished and unfinished gasoline were reduced more than anticipated.

Exports of motor fuel in October showed the first material decline in several months, totaling 2,461,000 barrels compared with 2,985,000 barrels in September, the report stated.

"This decline," the report explained, "was not related to events in Italy as, according to the Bureau of Foreign and Domestic Commerce, no gasoline was shipped from the United States to that country either in September or October, 1935. However, exports of crude oil to Italy increased from 62,000 barrels in September to 417,000 barrels in October."

Exports of crude oil in October totaled 4,810,000 barrels, as compared with 4,971,000 barrels in September. In October, 1934, crude exports totaled 3,277,000 barrels. For the first ten months of 1935, crude exports were 42,991,000 barrels as against 34,010,000 barrels during the corresponding period last year.

U. S. Withdrawal from Private Business Urged by Business Publishers

NEW YORK, Dec. 6 THAT the federal government withdraw from competition with or management of private business as soon as conditions permit was urged in a resolution adopted by the Associated Business Papers, Inc., which met in New York Dec. 2 and 3. The Associated Business Papers is the organization of leading business papers of the country, reaching over a million readers among business men. NATIONAL PETROLEUM NEWS is a member of this organization.

In view of the uncertainty regarding the methods for putting into effect the Social Security Act passed by the last Congress, the ABP adopted another resolution recommending to Congress that the operation of the act be suspended for an additional year, in order to give more time for study of unemployment insurance, old age pensions and so on.

A third resolution called on the federal government to curtail its expenditures in order to bring about a return of confidence on the part of business which is essential to sound recovery. The texts of the resolutions follow:

"Recognizing that American industry has achieved its present high level of efficiency that has won the admiration of business throughout the world through the free rein given private initiative and spurred on by the hope of financial reward, we deplore the increasing trend toward the usurpation of managerial responsibility by governmental agencies, with the inevitable tendency to lessen individual initiative that will result therefrom.

"Be it resolved that we urge on those responsible for the formulation of the policies of government, the acceptance as a definite principle that governmental agencies should withdraw from every form of competition with or management of private business as rapidly as conditions may permit, looking to the confining of their activities to such regulation as may be necessary to prevent injustice and insure equality of treatment to all."

"Whereas there seems to be considerable merit to certain of the objects embraced in the Social Security Act, and whereas there also seems to be considerable reason to doubt the wisdom of the methods for financing its operation as regards taxing payrolls, these doubts involving not only the constitutionality but also the possibility that this act will materially increase unemployment;

"Therefore be it resolved that it is recommended to Congress that effective operation of such provisions of the Social Security Act be suspended for an additional year to the end that more thorough factual studies can be made of the subject."

"Whereas it is the thought and opinion in a majority of the fields of American business and industry that, until the principles of thrift, economy and balanced budgets which have been so essential to the success of private enterprise are manifested as accepted objectives of Federal, state and local government—

"Be it resolved — that the members of the Associated Business Papers, Inc. feel it a matter of public duty to express a warning in the matter of government expenditures that unless and until such expenditures are curtailed there cannot be the nation-wide return of confidence that is essential to sound recovery as distinguished from speculative inflation."

Daily Average Production, Important Districts, American Petroleum Institute Figures

	Week Ended Dec. 7 Barrels	Nov. 30 Barrels
Okla. City	114,200	126,100
Total Okla.	458,550	484,700
East Texas	435,000	434,000
Total Texas	1,057,000	1,067,950
California	684,800	665,000
East of Rockies	2,100,500	2,155,450
Total U. S.	2,785,300	2,820,450
Crude Imports	44,000	45,860
Total New Supply	2,829,300	2,866,310

Arnott and Schuh Address Cleveland Dealers

CLEVELAND, Dec. 10.— "Unity for more Profits" was the theme of the speakers at the stabilization dinner given under the auspices of the Associated Independent Oil Dealers here last night. Attendance at the dinner was more than 700.

Wilmer R. Schuh, president of the National Association of Petroleum Retailers, with which the local organization is affiliated, urged dealers to keep the margins they now have and stop giving "under the canopy" discounts and "secret" rebates. He warned the dealers that instead of getting wider margins they would have narrower ones if they continued such practices.

Mr. Schuh outlined the policies of his organization and pointed out how the association, working with refiners and producers, could bring about stability within the industry.

Charles E. Arnott, vice-president Socony-Vacuum Oil Co., and chairman of the marketing committee of the American Petroleum Institute told the group of the difficulties of getting the various interests in the industry to work together. He pointed to the improvement in the industry since last January to show what can be accomplished by co-operation.

E. V. Weber, president of the Ohio Petroleum Marketers Association acted as toastmaster. He told of the work his association has done in Ohio. He also said that co-operation between all interests was largely responsible for the elimination of depressed prices in the Ohio market.

Elmer Tidd, president of the local organization presided.

Oil Embargo Seen as Test of Plan to Halt Shipments of Other War Materials

By A. M. Petty
N. P. N. Staff Writer

WASHINGTON, Dec. 7

ALTHOUGH the Administration apparently is marking time on the neutrality question until Congress meets January 3, there was no let-up this week in front-page publicity for the oil industry.

Shipments of copper, iron and steel, cotton and other materials, as well as manufactured goods, equally as essential as oil to Mussolini's attempted conquest of Ethiopia, went practically unnoticed in the newspapers.

Any development in the question of shipping oil to Italy is played up on the front pages. There is little room for news about shipments of other raw materials—even if reporters had the time or inclination to dig it up. The public mind is being educated to the belief that Mussolini would be handcuffed if American oil companies would stop shipping oil to Italy.

Many returning senators and congressmen bring word that their constituencies are overwhelmingly in favor of embargoing raw materials to Italy, especially petroleum.

Meanwhile, oil-producing countries in the League of Nations continue to supply the Italian government with the greater part of its oil requirements. A meeting of the League sanctions' committee has been set for Dec. 12 at which it is expected that an oil embargo will be voted to go into effect—if and when the United States takes similar action.

But the Administration apparently has decided that it cannot embargo oil under the present Neutrality Act and is drafting amendments which will broaden its powers. These will be submitted to Congress shortly after it meets three weeks hence.

Something in the nature of a trial balloon was sent up by the Administration this week when a spokesman for the Senate Munitions Committee guardedly announced that some of the President's advisers favored adding a "one-word" amendment to the Neutrality Act immediately upon convening of Congress.

This amendment would insert the word "oil" in the section empowering the President to embargo shipments of "arms, ammunition or implements of war." The present Neutrality Law expires in February. It was contended that embargoing of other raw materials could be deferred to see how the oil ban worked out.

In other quarters, it was reported that the State Department was working on a series of amendments to the Neutrality Act. It is no secret that the Administration wants permanent neutrality legislation which would be strongly-worded yet flexible enough to meet unforeseen situations.

There have been no further developments in the Administration's left-handed proposal of export quotas which would apply the ban only on "abnormal" shipments to belligerent countries. Possibly this is one of the neutrality law amendments the state department is working on.

The Senate Munitions Committee also broke into print with predictions that the committee would look into what American oil companies are shipping oil to Italy. Chairman Nye is expected back about Dec. 15.

In one vaguely-worded news story, apparently emanating from the munitions committee, the statement was made that petroleum shipments to Italy during the first nine months of 1935 had increased "1200 per cent." This is not substantiated by data in official government reports.

Congressman Wesley Disney, of Tulsa, whose name has been linked to several oil bills in recent years, returned this week. To his office, newspaper reporters flocked, eager for any statements from a quotable source on the all-important question of an oil embargo.

The Tulsa congressman said he favored embargoing oil shipments to Italy, but added that he thought shipments of other raw materials, essential to war, should be likewise banned. He took occasion to reiterate his views that oil imports should be limited to a "proper" ratio to domestic production.

Two "developments" featured newspaper stories this week on the oil angle of the neutrality question.

Glaring headlines on December 4 charged that a subsidiary of Standard Oil Co. (New Jersey) had entered into an "agreement" with the Italian government to supply Italy with oil from sources outside the United States in exchange for a 30-year monopoly on the oil business in that country.

The story (it was carried by only one news service) was promptly and categorically denied by Walter C. Teagle, president of the Standard. Later, a cablegram from SIAP (Standard's Italian subsidiary) supported this denial. The Italian Government also emphatically denied the story.

While the denials were still being carried in the inner pages, oil again sprang into the headlines this time with the "news"

that Vacuum Oil Co. had just completed arrangements for a $6,000,000 oil refinery at Naples, Italy. Stories from oil industry sources appeared later —in the inner pages—pointing out that this was hardly news as the Vacuum's plans were announced some months ago and were well-known in the industry sometimes before that.

Reports of the Italian-Standard "agreement" (denied by both parties) was a springboard for Senator O'Mahoney, of Wyoming, to reach the headlines. He was quoted as saying that this "deal" emphasized the need for enactment of his bill (S-3363) to license all industries engaged in Interstate Commerce.

There is evidence of increasing public interest in the oil angle of the neutrality issue. Various organizations spokesmen are jumping into print with statements "deploring" shipments of oil to Italy. Of course, much of this is due to news-hungry reporters but it has the effect of keeping public attention focused on the oil industry.

In New York, a member of the "People's League for Economic Security" has apparently taken it upon himself to query the principal oil exporting companies on their attitude toward shipping oil to Italy. The returns, or lack of them, probably will reach the printed pages soon.

Another indication of popular sentiment in favor of shutting off oil to Italy was the reaction in Canada to the new government's disavowal of its representative's proposal for an oil sanction by the League of Nations. There was considerable unfavorable editorial comment on the government's action.

Peace overtures to Italy by Great Britain and France may relieve the League of imposing an oil sanction. League powers have gone far enough in their threats of an oil embargo to convince Mussolini, apparently, that they mean business.

Should these negotiations fail, it is expected that the League will formally vote an oil embargo against Italy, but will defer putting it into effect until the United States acts.

Meanwhile, the Roosevelt Administration awaits the convening of Congress. No new moves to exert pressure on American Oil Companies to "voluntarily" cut off Italian oil shipments have come to light. But the storm of publicity continues unabated.

New Jersey Standard Denies Making Deal With Italian Government

By T. W. Watson
N. P. N. Staff Writer

NEW YORK, Dec. 6

PRESS reports from Europe that the Standard Oil Co. (N. J.) had entered into an agreement with the Italian government to supply it with oil in the event that the League of Nations included that product in its sanctions were unequivocally denied by Walter C. Teagle, president of the Jersey company. Denials also were made by the Italian government.

While the source of the stories could not be learned here, it was felt by many oil men that it was a move to discredit the United States on the eve of the League of Nations meeting at which oil sanctions will be discussed and possibly to spur the government agencies in the United States to make attempts to stop shipments to Italy before the League takes action.

According to the newspaper stories the Standard's Italian subsidiary, the Societa Italo-Americana del Petrolio, had entered into a "gentlemen's agreement" to supply Italy all the oil it would require when and if the League declared an oil embargo. Also the Jersey company was to extend the Italian government a credit of $81,000,000 with which to purchase oil. In return for these favors, the Jersey company was to be given a 30-year monopoly on the Italian market.

Other details of the plan as given were that the oil would be supplied from sources outside the United States, chiefly from Roumania, in order not to conflict with the policy of the United States government in regard to discouraging abnormal shipments of oil to the warring countries. Also that the oil was to be shipped to Italy by way of Hungary, or from the Far East, to avoid having to use the Suez Canal, which is British controlled.

In denying the story of the transaction, President Teagle issued the following statement:

"In denying the story that a Jersey interest had reached an understanding to provide Italy with oil in return for an exclusive monopoly, I said last night that so far as I know, no such arrangement had even been proposed to our Italian subsidiary; furthermore, that officials of that company knew that such a contract would not only be impossible to fulfill, but in no circumstances would be accepted by us.

"This morning I have a cable from our European management as follows: 'With reference to this morning's sensational and absurd report, the French radio has this morning broadcast categorical denial by Rome government, also your official denial. Hawkins, the local manager of SIAP at Genoa advises that it was first information he had of such a report as no reference appeared in local press. Opinion in responsible well informed quarters here is that false report has been circulated with intent to cause embarrassment on the eve of Geneva meeting.'

"I reiterate that the published report of the alleged agreement is absolutely false in every respect."

While the newspapers were full of talk on oil sanctions, embargoes and banning of oil sales to Italy, oil companies generally were saying little about these things and going about their business. While generally reluctant to make any statements regarding the government's

policy or the political aspect of the situation, the opinion was expressed that so long as oil continued to move to the Italians from countries which are a party to the League of Nations, then there should be no objection to American participation in the business. The time to complain, it was felt, would be when the League nations had ceased oil shipments.

While admitting that shipments of crude, fuel oil and refined products to the Italians had helped the American markets to some extent, many companies said that the real reason for the excellent statistical position of the Coastal markets was the increased domestic demand through 1935, helped along by higher sales to foreign countries other than Italy.

It was pointed out that probably the chief reason for the jump in export gasoline prices at the American Gulf this fall was the heavy buying by the French refiners. In a short period these refiners were in the market for from 15 to 25 cargoes of gasoline, according to trader's estimates, and the Gulf prices jumped over 0.5 cent a gallon.

No full cargo sales of gasoline were reported at the Gulf during the week ended December 7, although a part cargo was reported sold to a French refiner for lifting late in December.

* * *

NEW YORK, Dec. 6

The *Lamp*, official publication of the Standard Oil Co. (New Jersey) today explained the company's views on the Italian situation and its position in the market there. The article denied that the Jersey company had increased its business as a result of the Ethiopian war and said that it was conforming to the United States government's policy in regard to war shipments.

Following is the statement:

The Standard Oil Co. (N. J.) is sincerely anxious, both for humane and business reasons, that peace between Italy and Ethiopia be restored at the earliest possible date.

Our company is firmly of the opinion that nothing should be done by any citizen to embarrass the efforts of the United States Government to avoid entanglement in the European political situation. As between patriotic obligations and business opportunities, there can be no choice: despite our duty to stockholders and employees, our first loyalty is to the nation.

In some quarters our company has been criticized, usually through a lack of knowledge of the facts, for its petroleum sales in Italy since the beginning of the recent war. A frank explanation of the business done and the reasons therefor is in order.

WHEN the extraordinary demand for oil in the war operations developed, the Standard Oil Co. (N. J.) as majority owner of an old established domestic company in Italy, was in a favored position to get this expanded business.

As a matter of policy we did not take it. With the single exception of some crude oil purchased and transported by an affiliated company and re-sold by it last September to a broker, no Standard Oil Co. (N. J.) interest has made shipments of what might be termed war business. The increased business has been obtained by other companies and brokers which have not customarily supplied oil to Italy.

Just as definitely as the company declined to take advantage of opportunities for securing this war time trade it felt obligated to prevent so far as possible disturbance of its normal domestic business in Italy.

Year in and year out, the Standard Oil Co. (N. J.) subsidiary, the S. I. A. P. has been supplying gasoline to the owners of Italian motor cars, fuel for heating purposes, lubricating oil for plants and for the thousand and one other normal uses from the wayside pump to the factory. This is a business which goes on normally, irrespective of any war operation. Excepting the sale of crude by an affiliated company as noted above, our total shipments to Italy to date, plus those to be made in the remainder of this month, are actually less than the shipments for the year 1934. Thus, in the whole year of 1934 our shipments from all sources to Italy were 4,862,221 barrels, while this year, including our December estimate, the total figure will be only 4,723,673 barrels.

It is to be noted that our company's exports of gasoline and other supplies sent to our Italian subsidiary have been billed at the same prices as those named on shipments to other foreign countries.

This policy, we feel, is exactly in line with the objectives of the neutrality resolution. The United States Government has not taken a partisan stand. It has not declared one country in the wrong and the other in the right and in so doing indicated punitive treatment for the alleged aggressor. It has remained strictly neutral.

The Standard Oil Co. (N. J.) a United States corporation, therefore had no right to take it upon itself to find one or both nations at fault and shut off its normal supplies.

The Standard Oil Co. (N. J.) has usually taken care of one-quarter of the petroleum demand of Italy. We have obtained larger quantities of this oil from several other producing countries than from the United States, and each of these countries is a member of the League of Nations. Since the League has not prohibited the movement of petroleum to Italy from member countries, we have continued our regular shipments to Italy without objection or criticism from the governments of those countries where our supplies are located.

Three-fourths of the business of supplying oil to Italy has, in normal times, been enjoyed by companies in countries which are at present members of the League of Nations. During the period of the present Italian-Ethiopian controversy these same companies have continued their sales to Italy.

Our company has not been requested by the Government of the United States to cut off its oil shipments to Italy. Under these conditions, for us to end our shipments to that country would invite reprisals on the part of the Italian Government and the Italian people, with whom we have always main-

tained the friendliest relations.

Throughout this delicate controversy, the Standard Oil Co. (N. J.) has followed to the best of its ability a policy which it understands is in conformity with the law and with the pronouncements of the President of the United States and the State Department.

Suggest Putting Maintenance of Retail Gasoline Price up to Dealers

CHICAGO, Dec. 10

A NEW basis for contracts with dealer and jobber customers of refiners in the central west was discussed at a meeting of refiners at the Blackstone Hotel in Chicago, last week according to newspaper reports. Another meeting of refiners was to be held in Kansas City, Dec. 10.

The tank wagon price was up for consideration as the basis from which to figure gross profits for dealers and jobbers. This would replace the present basis of figuring margins off the service station price.

The proposal was to write a dealer contract to supply gasoline at 2 cents off the tank wagon price. For jobbers the proposal was to allow 4 cents off the tank wagon price.

Major companies then would post a service station price 2 cents above the t.w. price.

In effect the dealer, and the jobber's own service stations, would have a 4-cent gross profit, providing they did not give secret rebates or there was not a sub-normal retail price posted. The jobber's margin would remain the same as in effect now, 2 cents a gallon. Total spread between cost of gasoline laid down tax paid and the normal service station price would be 6 cents.

The burden of maintaining a normal retail price would then be upon the retailers. At present a lower service station price does not affect the retailer's margin. Under a tank wagon base price system the retailer with a sub-normal station price would be parting with some of his gross profits.

Although it was reported that C. E. Arnott, vice-president of Socony-Vacuum Oil Co., and executive vice-president of the American Petroleum Institute, was to have attended the Chicago meeting, Mr. Arnott was not registered on the meeting day, December 3, in the Blackstone Hotel.

Following the Chicago refiners' meeting no company made an announcement about putting a new dealer or jobber policy into effect.

New Italian Refinery Plan Denied by Socony

NEW YORK, Dec. 6.—Newspaper reports originating in Rome that the Socony-Vacuum Oil Co. was planning to build a new refinery at Naples, Italy were denied by the company today. It pointed out that they already had a refinery at Naples which had been purchased from the Petrofina Co. of Belgium in 1934 and that in July of this year announcements had been carried in the trade press and daily newspapers regarding plans to enlarge the Naples plant.

The following statement was released regarding the Naples refinery:

"The Socony-Vacuum Oil Co., through a wholly-owned subsidiary, the Vacuum Oil Co., S.A.I., has been marketing lubricating oils in Italy since 1889. Vacuum Oil Co., S.A.I. is an Italian corporation, subject to Italian law, with headquarters in Genoa.

"At the end of 1933, the Italian Government changed its tariff schedules and put into effect new petroleum legislation with the objective of requiring companies distributing petroleum products in Italy to obtain same from local refineries. A similar requirement has been in effect in France for a number of years. To protect our position and to comply with the new law, the Vacuum Oil Co., S.A.I. purchased in the summer of 1934 a refinery at Naples, formerly owned by the Petrefina Co. of Belgium, after having reached an understanding with the Government that the company would be granted an amplified refinery license to manufacture in Italy lubricating oils and to distribute locally gasoline and other products which inevitably result from complete refinery operation. The refinery is expected to operate on a crude run of about 3000 barrels daily.

"Vacuum Oil Co., S.A.I., is now in process of enlarging the refinery for this purpose. Under the most favorable circumstances the enlarged plant cannot be completed and put into operation before the spring of 1937. During the coming year Socony-Vacuum Oil Co. will probably be called upon to ship to its Italian company specialized and patented equipment which cannot be manufactured there."

"Dixie" Spreads to South

WASHINGTON, Dec. 7.—The movement for independent jobbers of the south to market petroleum products under an independent brand has reached the point now where negotiations are underway with sources of supply.

Approximately 40 jobbers met December 3, at Winston-Salem, N. C., to hear details of the "Dixie" plan from representatives of Dixie Interstate. Jobbers were present from all along the Atlantic Seaboard from Maryland to Florida. They are said to have manifested an enthusiastic interest in plans for marketing under the "Dixie" brand.

W. J. Morrison Killed

TULSA, Dec. 7.—Walter J. Morrison, general field superintendent for the H. F. Wilcox Oil & Gas Co., Tulsa, was killed in an automobile collision near Pampa, Tex., Dec. 5.

Mr. Morrison, aged 66, was born in West Virginia, and first entered the oil business in that state. He was associated with an independent oil company at Sapulpa before coming to Tulsa in 1924 to become associated with the Wilcox company. Survivors are his widow, a son and a daughter.

Nebraska Jobbers To Seek Curb On Gasoline Tax Diversion

By E. L. Barringer
N. P. N. Staff Writer

OMAHA, Dec. 5 A CONSTITUTIONAL amendment to prevent diversion of gasoline tax funds and motor vehicle registration fees is to be sought by Nebraska oil men.

This action was taken at the Nebraska Petroleum Marketers, Inc., convention this week in Omaha. The association is to seek support of oil jobbers and dealers, the Nebraska Good Roads Association and other organizations interested in non-diversion of highway funds.

Before jobbers had packed to return home the governor had indicated disapproval of such a movement. In newspaper comment the governor warned that during some future emergency the people might regret not being able to divert these funds.

There is a growing tendency to divert highway funds in Nebraska the jobbers charged. Figures from the state treasurer's office were cited, showing that the following proportion of the gasoline tax collections had been spent on the highway system; 1932, 74.65 per cent; 1933, 67.41 per cent; 1934, 62.50 per cent; and 10 months of 1935, 53.95 per cent.

A greater diversion was predicted for the coming year, based on the recent 1-cent additional tax levied for relief purposes. The resolution estimated that only 45 per cent of the gasoline tax collections during the coming year will be spent on highways.

Jobbers seek through a constitutional amendment to restrict gasoline tax and registration fee funds to construction and maintenance of public roads and bridges.

Nebraska oil men also took action on the tractor distillate problem troubling marketers in the state. A committee is to suggest trade names for each type. Establishment of a normal price on low flash tractor fuel 1.5 cents above that for high flash fuel was suggested.

As Nebraska does not permit any refund on gasoline used on farms, stove distillate has found a ready market as a tractor fuel. Some jobbers handle only a high flash distillate, others handle both a low and a high flash product. The Standard Oil Co. of Nebraska has only a high flash fuel, and there is no "market leader" on price for the low flash tractor fuel.

THROUGH adoption of trade names for each grade the jobbers hope to eliminate confusion among farmers by identifying the two types. Lack of a "market leader" on price has led to confusion, and jobbers seek an established differential between the grades.

A campaign is to be conducted by jobbers to educate the public to use each grade of fuel for the purpose for which was intended. This feature was aimed against using low flash tractor distillate for burner purposes.

Nebraska jobbers protested the federal zone system of purchasing, and asked that a system be substituted so that bids may be taken for each point of delivery to diversify federal government purchases.

A reduction of 0.5 cent in the present inspection rate of 1.5 cents a barrel is to be sought through an executive order. The latest reduction, from 3 to 1.5 cents, was obtained by such an order during ex-Governor Weaver's administration. Association officials were instructed by a resolution to seek another reduction.

The convention also endorsed the policies and purposes of the Nebraska Petroleum Industries Committee. H. H. Hahn, secretary of that committee, now has offices with the association in Lincoln, and while the industries committee public relations work will be conducted throughout the state Mr. Hahn also will be engaged in aiding association members with their local marketing problems.

Selection of officials resulted in all officers whose terms expired being returned to office. Officers are O. D. Corey, Corey Fuel & Oil Co., Lincoln, president; Thos. Murphy, Murphy Oil Co., Greeley, first vice-president; and H. V. Grantham, Lincoln Way Service, Kearney, second vice-president.

Two directors re-elected were J. W. Trenchard, Trenchard Filling Station, Cambridge, and George Trunkenbolz, Trunkenbolz Oil Co., Eagle.

The death of Mrs. Trunkenbolz early this week was announced during the convention. A resolution of sympathy was adopted.

For the 15th annual convention, with more than 400 persons registered, the Nebraska association presented a varied speaking program. The annual banquet and dance as usual was provided by the Omaha Petroleum Club.

The ladies were entertained with luncheons and a theater party. Local hostesses were Mrs. E. B. McCoun, Omaha; Mrs. J. K. Durfee, Omaha; Mrs. A. W. Anderson, Omaha; Mrs. Claude Rosenberg, Lexington; and Mrs. O. O. Corey, Lincoln.

Jobbers are not passing out of the picture, E. W. Fawcett, secretary of the Kansas Oil Men's Association, said in his address. In Kansas 20 years ago there were only 150 jobbers, compared with 900 today. Mr. Fawcett also said that 50 per cent of the gasoline used throughout the country is sold by jobbers.

As for the future of trade associations, Mr. Fawcett reminded jobbers that many plans and schemes during the past few years had failed but the organizations continue to live.

A discussion of the use of gasoline in tractors was presented by A. E. Wilt, Ethyl Gasoline Corp., Detroit based, on claims for greater power from gasoline driven tractors. To stimulate the gasoline market he suggested a refund of

taxes on gasoline used on the farm.

Jobbers were urged to sell the proper fuel for the new automobiles. "It is up to us as salesmen to sell the correct fuel for this new equipment, to take advantage of the opportunities provided by the automotive industry to sell higher octane gasoline," said Mr. Wilt.

The program and organization of the American Petroleum Industries Committees were explained by C. E. Wells, assistant to the chairman in the committee's Chicago office.

W. B. Banning, state oil inspector, related changes in his department and announced that a survey has started of bonds posted by oil men to insure gasoline tax collections.

Additional inspection offices have been opened at pipeline terminals and ports of entry, Mr. Banning informed jobbers, to make inspection more effective.

Mr. Banning promised jobbers that the inspection fees will be spent to protect oil men, and that if there are excessive collections he will be the first to ask for a reduction in fees.

Bess Gearhart Morrison, Lincoln, was the guest speaker from outside the industry who gave an inspirational address on the woman's viewpoint of the industry.

Mrs. Morrison advised jobbers to instruct station salesmen on these points:

Never argue with a woman.

Never give an opinion to a woman on politics, religion, or the make of car driven.

Never talk about hard times, or knock the administration or the "boss." "I distrust the man who is criticizing the man who signs the pay check," she said.

Employers were advised to take the time to thrill station salesmen with the importance of their job of meeting the public, and of the history and service of the oil industry.

S. A. Wassum, Tekamah Oil Co., Tekamah, conducted the memorial services of Nebraska oil men who have died since the 1934 convention.

Impromptu remarks by jobbers after the program sessions did not provoke heated debate.

Fred W. Witschy, Witschy Bros. Oil Co., Scottsbluff, charged that the state should have a law enabling the oil man to collect from farmers for credit, on petroleum products used in planting and producing crops, before the banker's loan is repaid.

Mr. Witschy forecast that the jobber will have to do a greater volume of credit business with dealers and farmers than in the past few years.

Terry Carpenter, Scottsbluff jobber famed for going to Congress on the crest of a gasoline price war, told jobbers that production, manufacturing and distribution in oil and in every line of business must be separated.

Mr. Carpenter warned jobbers to ponder over their status as "independents."

"How many independent refiners are in business today?" he asked. "What is going to happen to you fellows when the independent refiner goes out of business and you have to buy from integrated companies? When you are under control of integrated companies they'll tell you your margin and how to run your business."

Mr. Carpenter charged that the present administration, unknowingly, was making a big man bigger, the small man smaller.

Charles Putnam, Council Bluffs jobber and Iowa legislator, spoke right after Mr. Carpenter, and said the present administration was "doing the best they knew how to help the little man."

Mr. Putnam also reprimanded oil men for the tax burdens heaped on the industry because oil men have not attended to their business in Congress and the state legislatures. He related how few oil men participate in making their needs known to legislators.

Greater Driving Safety Imperative

Automobile Engineers Told

CLEVELAND, Dec. 10.—Safety, safety, and more safety was the overriding theme of Austin Wolf, automotive engineering consultant of New York and guest speaker before the Cleveland section of the Society of Automotive Engineers last night. The number of automobile accidents is increasing, he pointed out, and the increase cannot be blamed primarily on the supposed increase in the use of liquor.

"Something further must be done about brake design," he said, "Brakes have always been three or four years behind power plants, in development, and have not progressed with the other car developments." This and other phases of the problem brought on a discussion between the weight-in-front and the weight-in-rear advocates, on the old controversy as to the proper way to distribute weight to increase the stability of cars. The case for and against front-drive vs. rear-end-drive was also argued.

Wolf stressed the fact that the number of accidents is increasing rapidly with the increasing cruising speed of motor cars. Tire makers are warning, designers, he said, that we are attempting to brake cars at top speeds of 80 miles per hour, with the same ground contact on four tires as was used when top speeds were 50-60 miles per hour, and that the frictional contact of the present-day wheels is inadequate to properly control the higher speeds that motors now develop.

In discussing details of 1936 car designs, Wolf good-naturedly ridiculed the "style engineers" whose efforts at narrowing radiator grilles and other sales-appeal ideas have resulted in building an oven around the power plant, limiting the engineers in the application of sound design principles to power plant development, and making trouble in crankcase and fuel systems. By slides and photographs he showed how the flow of air to and through the radiator is being hampered, increasing the cooling difficulties at a time when increased speeds make greater cooling capacity highly desirable.

Wadhams Refuses to Give Cost Records In Wisconsin Marketing Quiz

By L. D. McGuan
N. P. N. Staff Writer

OSHKOSH, Wis. Dec. 4 WADHAMS OIL CO. supplied the fire works at the third hearing of the Wisconsin department of agriculture and market held Dec. 4 in Oshkosh. J. H. Marshutz, counsel, refused to give cost records at a company-owned station in Oshkosh. At the first hearing Oct. 8 and 9 Wadhams had given the commission complete and original records of two Milwaukee stations.

At the close of the latest hearing, however, Mr. Marshutz objected on the ground that the department had no authority to subpoena this information. He also refused the offer of R. M. Orchard, counsel for the department who presided at the hearing, that the records be given in confidence to the commission as Pure Oil Co. had done earlier in the day.

As in the current Michigan investigation, occasional references to "meetings in the Blackstone hotel, Chicago, to fix margins" were made.

F. B. Bunn, zone manager for Pure Oil Co., was the first witness called to the stand by Fred M. Wylie, attorney for the Wisconsin Petroleum Association. Mr. Bunn had previously testified at the first hearing.

Records of Pure Oil Co. were offered "in confidence" to Mr. Orchard, but "not as a matter of public record." Counsel for Pure took the position that such a procedure would be "like opening their books to competitors."

Cost records of a station in Fond du Lac, Milwaukee bulk plant operations, and sales and expense sheet for the Milwaukee branch for 10 months to Oct. 30, 1935 were then "filed with the commission, but not as part of the hearing," over the objections of Wylie. "They don't want a hearing they want a confessional," he said.

Mr. Bunn was questioned closely on Pure's acquisition of Capitol Oil Co., Madison. He admitted that Capitol, which now was a wholly owned subsidiary, at one time received 1 cent per gallon more margin than other jobbing companies. However, it was explained that the parent company did none of the advertising for Capitol.

A. D. Faas, general agent for Sinclair at Green Bay admitted that he did not know if the company was making or losing money in its Wisconsin operations, and that he had no cost records for his division. Mr. Wylie failed to wring from the witness an admission that his salary went higher as his gasoline quota increased. Mr. Faas said that Green Bay, a city of about 38,000, has room for more of the right type stations. By this, he explained, that he meant stations giving complete service. He said he thought there are now about 50 service stations in Green Bay.

E. H. Riggs, Whiting-Riggs Oil Co., Ripon, and president of the Dixie Distributors of Wisconsin, testified that the 37 members of the Dixie group operated on a 5.5-cent margin. In answer to a question by Wylie, Mr. Riggs said that advertising, management and other costs were covered by the 5.5-cent margin.

C. J. O'Connor, independent oil man from Fond du Lac said two independent jobbers, formerly located at Fond du Lac, had been forced to quit. Next session of the hearing will be held Dec. 18 at Eau Claire.

Nicholas Protests Proposed Change In Asphalt Purchasing Policy

NEW YORK A PROTEST against any change in the government ruling permitting the use of foreign asphalt on WPA projects has been written by L. V. Nicholas, president of the Warner-Quinlan Co., in a letter to the Procurement Division of the Treasury Department. Refiners and producers have been asking that foreign asphalt be barred from the WPA projects in line with the Domestic Origins Act.

In his letter Mr. Nicholas characterizes the proposed order as being "foolish, uneconomic and political." Following is the text of the Nicholas letter:

As long as it seems to be the policy of our Industry, under the leadership of the American Petroleum Institute, to encourage waste and early exhaustion of our petroleum resources and, under cover of an annual meeting held in California this month, to take advantage of an opportunity to again broadcast to the nation the Institute's unjustified confidence in the inexhaustibility of our diminishing crude oil reserves, it seems to me a waste of time and effort for your department to investigate the practicability of a program that has already been mapped out and decided upon.

Our company can and will meet any foolish, uneconomic and political ruling requiring asphalt of domestic origin in connection with the Works Progress Administration projects and the millions of American tax payers will pay the ultimate extra cost with no benefit to them in order to feed the California "kitty."

What difference does it make if American capital invested in our neighboring friendly countries—Mexico and Venezuela—is crippled and discriminated against?

What does the domestic producer of California or any other asphaltic base crude care if the governmental income of 21 cents per barrel tax on imported asphaltic crude has three times the national income advantage of the most highly imaginative estimated increase in the employment of American labor

to produce a corresponding domestic supply?

The truth is that a complete and exhaustive report of the Fact Finding Committee, appointed by the Petroleum Planning & Co-ordination Committee during NRA to study exactly this problem, is being ignored and knowingly withheld from consideration.

In the area in which we operate, to bar the importation of asphaltic crude will create new unemployment and will injure and defraud American investors. California has an axe to grind and the American tax payer is again about to turn the wheel.

I sincerely believe in the protection, at all reasonable costs, of the independent producer and refiner of domestic crude oil but, as between the real tax payer's interest and that of a group with an axe to grind, I stand squarely for a broad policy of "live and let live."

Life is too short to argue against orders that are about to be made final and binding and our company is getting ready to make poorer asphalt from crude of domestic origin that will cost the public more money and do American labor no good but, on the contrary, will increase its general tax burden.

I am furnishing no statistical data as there is plenty of that already on the record and available in Washington which past experience indicates is not only neglected, but ignored.

Please let me add that this letter must, in no way, be construed as a reflection on the individual fairness, integrity or the high intelligence of your department—but I am afraid facts and figures are at no time important in deciding issues of this character.

California Crude Advance Evidence Of Progress Toward Stability

LOS ANGELES, Dec. 6

STANDARD Oil Co. of California's advance Dec. 6, of its posted prices for refinable grades of crude was accepted as evidence that real progress had been made in reaching an agreement on the measures necessary to secure market stability. Union Oil Co., the only other important factor in posting crude prices, met Standard's advances and was promptly followed by other major purchasing companies.

New prices represent increases ranging from no change for the lower gravities to 21 cents a barrel for the highest gravity, an average of about 10 cents per barrel. On the average grade of refinable crude, namely Signal Hill 27 gravity, an advance of 10 cents brought the new price to 90 cents a barrel. With the advance made on Nov. 1, the new increase restores 40 cents of the 50-cent cut made on Aug. 29 from the basic crude oil price of $1 a barrel that had existed for approximately two years.

Kettleman Hills North Dome occupies the premier position in the new schedule, with $1.11 per barrel for 39 gravity and a low of 95 cents for its 33-gravity oil. Elwood ranks second in the price scale, with 99 cents per barrel for 33-gravity and $1.07 for 37 gravity. Montebello receives $1.07 for 40-gravity oil, and Santa Fe Springs the same price for 38-gravity. The low limit of 65 cents a barrel for 14-gravity oil in the San Joaquin Valley fields remained unchanged.

Rumors of immediate advances in gasoline prices were considered premature in view of the unsatisfactory condition of the price structure for third grade and competitive brands of gasoline. Although marketing officials were still optimistic, actual conditions were considered somewhat less favorable than during earlier stages of the negotiations for a new voluntary marketing code.

Unanimous support by independent refiners had not been secured and no acceptable solution had been found of the problems connected with the operations of secondary companies or marketing affiliates. Unwillingness of the smaller integrated companies, as well as the secondary companies, to co-operate in a stabilization movement had not been overcome.

Although a moratorium on pump solicitation was still ostensibly in operation it did not prevent a continuation of the struggle for increased gallonage, especially on the part of independent refiners and major company affiliates. Their activities were believed to be largely influenced by the hope of securing increased quotas when, or if, the proposed code is put into operation. Difficulties in reconciling conflicting claims and ambitions on the part of these two groups are expected to be serious obstacles to an early settlement. These efforts to secure increased gallonage are considered chiefly responsible for the prevalence of cut price signs for third grade and competitive brands of gasoline in the Los Angeles Basin and San Joaquin Valley.

A recent survey of retail conditions in the metropolitan district of Los Angeles showed that approximately 1000 pumps carried signs offering gasoline at 1 cent under the established price of 12.5 cents for competitive brands, and about an equal number of other pumps were selling major company third grade brands at less than the regular price of 13.5 cents a gallon. A more serious condition revealed by the survey was the large number of stations offering standard brands of gasoline at less than the posted price of 15.5 cents a gallon, or not displaying any price sign.

Current increases in crude prices were believed to be part of a plan to carry values, by easy stages, to even higher levels than existed prior to Aug. 29. The conviction among California marketing officials appeared to be growing that an era of relative scarcity of oil in the state is approaching, with the probability that high gravity refinable crude will before long command $1.25, or even $1.50, a barrel. With such a development, and with the bulk of the state's oil reserves held in strong hands, the marketing picture would be radically changed and the problem of stabilizing the price structure would be greatly simplified.

THE PANORAMA of PETROLEUM in the Mid-Continent

by Lawrence E. Smith

TULSA, Dec. 7

CHAIRMAN James A. Frear, of the federal tender board in East Texas, has made the newspaper columns with a bit of chest-thumping over the achievements of the board under his direction. This board refuses or grants permission to ship oil in interstate commerce. Mr. Frear, former member of Congress, was appointed to the board in the most recent of the numerous disturbances which have come to be the customary thing in secretary Ickes' administration of East Texas federal regulations.

Chairman Frear uses up his newspaper space to tell how much better his board is functioning than did the former board. The old board was allied to the Petroleum Administrative Board. The new one with the personnel attached to it, is as nearly 100 per cent Louis R. Glavis as that individual can make it.

The measure of the new board's efficiency, it is gathered from the Frear statement, is the number of applications rejected. As quoted by International News Service in the Fort Worth Star-Telegram of Dec. 4, he said:

"During the past six weeks, cancellations, withdrawals and refusals of federal tenders by the board reached far more than the combined totals of like rejections during the preceding five months. In fact the combined figure for the five months preceding was passed in the first month of the new board's existence."

"Cancellations," as used here seems to imply that the former board granted permits to ship and that the Glavis board has rubbed them out. The plain meaning of this is that the old board was careless and negligent, that the shippers were putting something over. That, of course, is the story the Glavis faction told Ickes and on that basis achieved the full control of the East Texas administration that it had long sought.

Of course, a big showing can be made by refusing or delaying the issuance of permits. If no oil were shipped at all, following the Frear brand of logic, the record would be perfect. The new broom is making a clean sweep and shipments have been lower. But some part of this efficiency has been achieved by the simple process of taking applications under advisements, delaying action until "investigations have been completed." And some of the "rejections" have been for minor clerical errors in the applications. When the form has been corrected, the application is granted, but that constitutes another "rejection" to help run up a big score.

No amount of boasting of improved service will explain the political juggling that Ickes has done. The Glavis crowd started its raid by making an investigation of the old board and the examining unit which worked with that board. The examiners were grouped under what was known as the Federal Petroleum Agency. As a result of this inquiry, two examiners were suspended and their pay stopped. More than 60 days have passed and Ickes hasn't yet ruled on their guilt or innocence.

G. W. Van Fleet was head of the examiners. He was pulled out of that post, which meant, in effect, that he wasn't doing a good job. But, last week, he was made a member of the tender board itself, which is a higher authority than the investigation unit. In any other than a political sense this would mean that he wasn't competent to direct examinations but was perfectly capable, as a tender board member, of deciding whether the examiners had brought in the correct dope.

Some unrevealed political motive was back of the other changes. Frear knew nothing of the oil business. The other member is C. L. (Linkie) Waterbury, who is cousin to Mrs. Franklin D. Roosevelt. He worked under Glavis for a while in New York.

The man who is really in active charge is Thomas G. Killiher, who has been in East Texas for more than a year. He headed the Glavis unit. For a long while, with the old board functioning, it was quite a mystery why the Glavis outfit was kept in the field. It is very clear now. It was there to battle its way back to control. It has that control. The board acts wholly on the recommendations of the Glavis investigators.

Meantime, the two examiners can't find out whether they are officially guilty or innocent. It makes a difference to them. They have been investigators for years and dismissal, even by Ickes, for cause would be an indelible mark against their records, affecting future employment by state or federal government. Restoration to service, with charges disproved, is what they seek. They have not been accorded the courtesy of a hearing.

Problems and Yet More Problems

All observers agree that the Railroad Commission of Texas is now doing a good job in East Texas and for the moment everything is quiet. But the commission must be lying awake nights wondering how to get around the several annoying problems that are being fashioned in several workshops.

The state-wide hearing to take testimony on which to base proration order for January will be held Dec. 16 and it promises now to be one of the old-time variety. Col. E. O. Thompson, commission chairman, has exulted publicly for the past year at the harmony which prevailed at hearings. It looks as though he will have no

cause for cheerfulness in this respect when he calls the next gathering to order.

The commission has been trying to keep Texas production somewhere near the one million-barrel figure. The task is getting more difficult, as there have been many wells completed in recent months and the allowable per well is growing much smaller. And it must be made lower and lower unless the over-all figure for the state be deserted. This doesn't apply merely to the East Texas field, but to the Gulf Coast, to West Texas pools and to the North Texas area. The clamor for increases in allowables from all active districts under proration grows louder.

A trainload of East Texas people is being mustered to come to Austin on the 16th and show, by weight of numbers, the necessity for a bigger helping for East Texas. Big delegations are supposed to be impressive to men who owe their jobs to the electorate. Another group wants the commission to revise its proration method in East Texas so as to take into account the size of tracts drained by wells.

At the Los Angeles meeting of the A. P. I. Col. Thompson, in his formal address, said: "I am convinced that the people of Texas do not want us to so administer the oil law in a manner that would lower the price of crude oil. In fact, they feel Texas oil should bring a somewhat higher price than it now brings."

One oil man asserted privately last week that the only thing that will still the cries for higher allowables is a price advance. That thought might have been lurking behind the quoted words of the commission chairman.

Tax Men Survey the Future

Standing committees of the Mid-Continent Oil & Gas Association on state and local taxation and on federal income and excise taxation met for three days in Dallas, Dec. 4, 5 and 6, examined the present and surveyed the future. They found little of encouragement. The trend, discussed by numerous speakers on many topics, was for bigger, more confiscatory taxes on oil and gas.

The extreme of this, apart from the Dallas meeting, is illustrated by the campaign currently being waged by F. W. Fischer, Tyler attorney. He is out for a 15-cent-per-barrel tax on crude oil in Texas. His argument is that the old-age pension now provided for by Texas law but not financed, can be paid in this simple manner.

The tax men who met in Dallas are representatives of oil companies. They expressed by resolution a desire for complete information on all taxes paid by the oil industry in Oklahoma, Kansas, New Mexico, Texas, Louisiana and Arkansas, and asked the general officers of the Mid-Continent Oil & Gas Association to gather the data. It is estimated that more than half the cost of government is being carried by oil in certain states. The tax men want to know for certain.

Glen E. Thompson, Tide Water Oil Co., Tulsa, was re-elected chairman of the committee on state and local taxation and F. B. Plank, Empire companies, Bartlesville chairman of the committee on federal income and excise taxation. The committees have been in existence for several years, have done valuable work. It appears that they will continue for some time to be the shock troops of this part of the U. S. in the battle with the tax grabbers.

Chemical By-products of Petroleum Shown At Chemical Industries Exposition

NEW YORK, Dec. 5

ONE of the most interesting displays, to the petroleum refiner and the petroleum chemist, at the Chemical Industries Exposition here this week, is that presented by Alco Products, Inc. That display shows the various products which may be made from still and natural gases by polymerization methods. The process referred to is the Pure Oil Co. thermal polymerization process, for which the Alco company is sales designing, and construction engineers.

Under the direction of M. B. Cooke, sales and designing engineer of the Alco group, the different products are shown in actual samples of materials actually made, many of them on a commercial scale or in large-scale development units. These include ethylene gas, used as an anaesthetic in surgery; glycol, a dihydric alcohol used as an anti-freeze and for other purposes, of which one trade name is Prestone.

From ethylene also is made the dibromide and dichloride, the former used in preparing Ethyl fluid, and both used as intermediates in the pharmaceutical and chemical manufacturing industries; benzol and toluol, normally obtained only from coal tar distillates.

From propylene and the isomeric butylenes are prepared a large number of chemicals and chemical intermediates, as well as polymerized gasolines and aviation fuels. Naphthalene and other derivatives formerly obtained only from coal tar are also produced by these methods. Refinery equipment and processes are also handled by the Alco company, and were discussed and displayed at the show.

Another new development, which has been creating an increasing interest among refining and distillation technologists, is the radically new Centrifuge - Fractionator developed by the Podbielniak Laboratories. This equipment, details of which were first discussed by W. J. Podbielniak before the American Chemical Society last April, (see NAT. PET. NEWS, May 1, 1934, page 34) utilizes the centrifugal principle in an ingenious manner to attain what appears to be extremely efficient and close fractionation of distillable liquids. The equipment is already being applied in a number of small and medium-sized installations in the chemical

industry, where continuous operation, large throughput and small floor space requirements for equipment are of especial importance. The display is under the direction of Mrs. Podbielniak, right-hand "man" in all of Dr. Podbielniak's developments.

Control, recording and similar instruments for the petroleum and other industries occupied a large amount of space at the exposition. Accurate and dependable automatic control of operations is of such primary importance to all industrial processes that the control instrument engineers play a large part in successful developments. The Foxboro Co. is displaying its entire line, which includes especially the new Stabilflo mechanism, adaptation of the Stabilog principle (already discussed in NATIONAL PETROLEUM NEWS) to control of flow of fluids. The new control is called the Vernier Valvactor, which will be discussed in greater detail later in these columns.

Taylor Instrument Co.'s new Valv-Presisor arrangement, to smooth out the variations in the control exerted by automatic diaphragm control mechanisms was shown, to the marked interest of chemical and petroleum technologists. This mechanism can be attached to diaphragm motor equipment which is already well known in the industries. The Brown Instrument Co., and the Leeds and Northrup Co., of Philadelphia, both widely known in industrial manufacturing circles, as well as The Bristol Co. of Waterbury, Conn., showed control instrument lines. Leeds and Northrup showed especially a Micromax speed recorder as one new development.

A.P.I. Chapter to Meet

TULSA, Dec. 7.—The Mid-Continent section of the American Petroleum Institute will hold its spring meeting at Witchita, Kan., Feb. 20 and 21, G. A. Holloway, secretary, has announced.

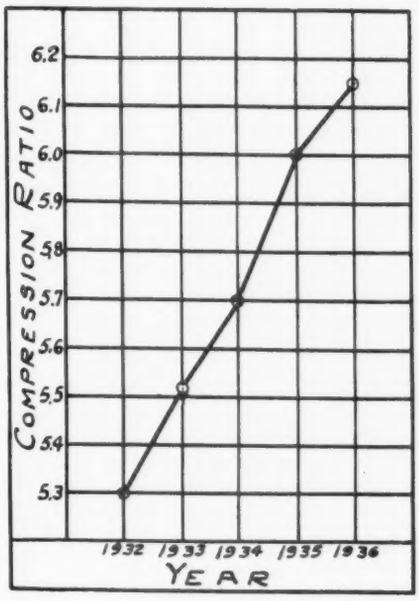
Plans are being made for attendance of 1000 or more oil men from Oklahoma, Kansas and the Texas Panhandle fields.

Only Twelve 1936 Car Models Have Compression Ratio Below 6 to 1

THE average compression ratio of passenger cars continues to increase steadily. With Chevrolet improving its cooling system and making a big jump in compression ratio and all Buick models stepping up, the average for 53 passenger car models offered by American manufacturers in 1936 is 6.15 to 1. In 1935 the average of all models was 6.0 to 1.

Optional heads are offered with 15 models in 1936. The average of the 15 models equipped with these heads is 6.45 to 1. Last year the average of 20 models equipped with optional heads was 6.31 to 1.

This year only three models for which optional heads are offered have standard heads higher than the optional heads. The remaining 12 are higher. LaSalle and two Cadillac models have optional low compression heads and standard high compression heads. A year ago 12 models offered optional heads with higher compression ratio and eight models offered optional low compression heads.



Trend of passenger car compression ratios

Only 12 models of cars produced by five manufacturers now have a compression ratio below 6 to 1. Buick's four models, Nash's three models bearing the Nash name and the Nash-built LaFayette, two Hupmobile models, Willys and Duesenberg are now the only models which are not at 6 to 1 or higher.

Buick gradually is building up its compression ratio. The Buick 40 this year has a ratio of 5.55 to 1 as compared with 5.45 to 1 last year. The 60 is up from 5.25 to 1 to 5.45 to 1. The 90 is up from 4.95 to 1 to 5.45 to 1.

Graham has put an aluminum head on its little six this year and increased its compression ratio from 5.8 to 1 to 6.8 to 1. The Graham 90 also has been slightly increased.

The use of aluminum in the small Graham is the only change in the aluminum cylinder head situation this year. Last year the aluminum head was dropped from five models as manufacturers improved cooling by the use of full length water jackets.

The automotive industry now is being told that the desired rapid cooling needed to permit high compression ratios without knocking can be obtained by special plug inserts of copper with radiating fins in the water jacket. It is claimed that these inserts in cast iron heads do away with the objections to the high cost of aluminum and the difference in coefficient of expansion between the aluminum head and the cylinder block.

One of the most important compression ratio increases of the year is that made by Chevrolet. Last year Chevrolet had a ratio of 5.45 to 1. The 1936 model has a ratio of 6 to 1. Compression pressure developed by Chevrolet is stated to

be 130 pounds at 1000 r.p.m. This compares with 120 pounds at 1000 r.p.m. for Buick 60, 80 and 90 models and 146 pound at 1000 r.p.m. for Oldsmobile 6. The Oldsmobile also has a 6 to 1 compression ratio.

The increase in compression ratio in Chevrolet is made possible largely by better cooling. Full length water jackets have been built into the cylinder block. The "octane selector" still is featured by Chevrolet so that motorists may adjust their degree of spark advance readily to the grade of gasoline being used.

The change in compression ratio from year to year has been more abrupt than the change in brake horsepower developed and in engine speeds. An accompanying chart shows the steady climb in average compression ratios during the past five years. In that same period, however, engine speeds have risen only about 250 r.p.m. In 1932 the average motor speed was about 3260 r.p.m. In 1933 it was up to 3359, in 1934 to 3421, in 1934 to 3485 and in 1936 to 3492 r.p.m.

Maximum brake horsepower at specified r.p.m. averages 112.5 for 53 models offered by passenger car builders for 1936. In 1935 the average was 109.0, in 1934 it was 111.03 and in 1933 109.1.

Piston displacement of 1936 passenger cars averages 275.5 cubic inches as compared with 271.1 cubic inches last year. Both figures are considerably below those of 1933 when piston displacement was 293 inches. This was before the new crop of small low-priced cars brought on by the depression.

	1936 Compression Ratio		1935 Compression Ratio		1936 Max. H.P. at Specified R.P.M.		1935 Max. H.P. at Specified R.P.M.		1936 Piston Displacement Cu. In.	1935 Piston Displacement Cu. In
	St.	Op.	St.	Op.						
Auburn 6	6.2	....	6.2	.....	85	3,500	85	3,500	209.9	209.9
Auburn 8	6.5	....	6.2	.....	115	3,600	115	3,600	279.9	279.9
Auburn Super C. 8	6.5	....	6.5	.....	150	4,000	148	3,900	279.9	279.9
Austin	....	....	5.1	.....	.....	.....	13	3,200	.....	45.6
Buick 40	5.55	....	5.45	.....	93	3,200	93	3,200	233.0	233.0
Buick 50	....	....	5.25	.....	.....	.....	88	3,200	.....	235.3
Buick 60	5.45	....	5.25	.....	120	3,200	100	3,200	320.2	278.1
Buick 80	5.45	....	.....	.....	120	3,200	.....	.....	320.2	.....
Buick 90	5.45	....	4.95	.....	120	3,200	116	3,200	320.2	344.8
Cadillac V8 60	6.25	....	6.25	5.75	125	3,400	130	3,400	322.2	353.0
Cadillac V8 70-75	6.25	....	.....	.....	135	3,400	.....	.....	346.0	.....
Cadillac V12	6.0	5.65	6.0	5.65	150	3,600	150	3,600	368.0	368.0
Cadillac V16	6.0	5.65	6.0	5.65	185	3,800	185	3,800	452.2	452.2
Chevrolet Master	6.0	.....	5.45	.....	79	3,200	80	3,300	206.8	206.8
Chevrolet Std.	6.0	.....	5.45	.....	79	3,200	74	3,200	206.8	206.8
Chrysler 6	6.0	6.5	6.0	.....	93	3,400	93	3,400	241.6	241.6
Chrysler 8	6.2	7.0	6.2	.....	105	3,400	105	3,400	273.8	273.8
Chrysler AF 8	6.2	6.5	6.2	.....	115	3,400	130	3,400	323.5	323.5
Chrysler Imp. 8	6.5	7.45	6.5	7.45	130	3,400	130	3,400	323.5	323.5
Chrys. Imp. 8 146	....	....	6.5	.....	.....	.....	150	3,200	.....	384.8
Cord 8	6.5	....	...	.....	125	3,500	.....	.....	288.6	.....
De Soto AS 6	6.0	6.5	6.0	.....	93	3,400	93	3,400	241.6	241.6
De Soto AF 6	6.5	7.0	6.5	7.0	100	3,400	100	3,400	241.6	241.6
Dodge 6	6.5	....	6.5	.....	87	3,600	87	3,600	217.8	217.8
Duesenberg 8	5.2	....	5.2	.....	265	4,200	265	4,200	420.0	420.0
Ford V8	6.3	....	6.3	.....	90	3,800	88	3,800	221.0	221.0
Graham 6, 80	6.8	....	5.8	.....	70	3,500	60	3,500	169.6	169.6
Graham 6, 90	6.7	....	6.5	.....	85	3,300	85	3,400	217.8	224.0
Graham 6, 110	6.7	....	...	.....	112	4,000	.....	.....	217.8	.....
Graham 8	....	....	6.7	.....	.....	.....	95	3,400	.....	245.4
Graham Super C.8	....	....	6.7	.....	.....	.....	140	4,000	.....	265.4
Hudson 6	6.25	7.0	6.25	.....	93	3,800	93	3,800	212.1	212.1
Hudson 8	6.0	7.0	6.0	7.0	113	3,800	113	3,800	254.5	254.4
Hupmobile 5-618	5.75	6.2	5.75	6.25	101	3,600	91	3,500	245.3	224.0
Hupmobile 5-621	5.8	....	5.75	6.20	120	3,500	101	3,600	303.2	245.3
Hupmobile 527	....	....	5.8	.....	.....	.....	120	3,500	.....	303.2
LaFayette	5.54	5.73	5.54	5.73	83	3,200	75	3,200	217.8	217.8
LaSalle	6.25	5.75	6.5	5.75	105	3,600	95	3,600	248.0	240.3
Lincoln Zephyr	7.1	....	.....	.....	110	3,800	.....	.....	267.3	.....
Lincoln V12	6.38	....	6.38	.....	150	3,400	150	3,400	414.0	414.0
Nash 400	5.61	5.88	....	.....	90	3,400	.....	.....	234.8	.....
Nash Amb 6	5.25	....	5.25	.....	93	3,400	88	3,200	234.8	234.8
Nash Amb 8	5.25	...	5.25	.....	102	3,400	100	3,400	260.8	260.8
Oldsmobile 6	6.0	....	6.0	.....	90	3,400	90	3,400	213.3	213.3
Oldsmobile 8	6.2	....	6.2	.....	100	3,400	100	3,400	240.3	240.3
Packard 120	6.5	....	6.5	7.0	120	3,800	110	3,850	282.0	257.2
Packard 8	6.5	....	6.5	6.0	130	3,200	130	3,200	320.0	320.0
Packard Super 8	6.3	....	6.3	6.0	150	3,200	150	3,200	384.8	384.8
Packard 12	6.4	....	6.4	6.0	175	3,200	175	3,200	473.0	473.0
Pierce Arrow 8	6.4	....	5.5	.....	150	3,400	140	3,400	385.5	385.0
Pierce Arrow 12	6.4	....	6.0	.....	185	3,400	175	3,400	462.0	462.0
Plymouth 6	6.7	....	6.7	.....	82	3,600	82	3,600	201.3	201.3
Pontiac 6	6.2	....	6.2	7.10	80	3,600	80	3,600	208.0	208.0
Pontiac 8	6.2	....	6.2	7.10	87	3,800	84	3,800	232.0	223.4
Reo 6	6.2	....	7.0	.....	85	3,400	85	3,400	228.0	228.0
Reo 8	....	....	5.4	.....	.....	.....	85	3,200	.....	268.0
Studebaker Dict. 6	6.3	....	6.3	6.9	90	3,400	88	3,600	217.0	205.3
Studebaker Pres. 8	6.5	....	6.5	.....	115	3,600	107	3,800	250.4	250.4
Studebaker Com. 8	6.5	7.0	6.5	7.0	100	3,400	100	3,400	241.6	241.6
Stutz SV 16	....	....	5.5	5.0	.....	.....	113	3,300	.....	322.0
Stutz DV 32	....	....	5.0	5.5	.....	.....	156	3,900	.....	322.0
Terraplane 6	6.0	7.0	6.0	7.0	88	3,800	88	3,800	212.1	212.1
Willys 77	5.7	....	5.13	.....	48	3,200	48	3,200	134.2	134.2
Av. all models	6.15	6.45	6.00	6.31	112.5	3,492	109	3,485	275.5	271.1

L. L. Boardman Dies

WICHITA FALLS, Tex., Dec. 3.—L. L. Boardman, president of the Boardman Oil Co. here, died Dec. 2 as a result of injuries received Nov. 12 in an automobile accident. He was 47 years of age. Before removing to Wichita Falls in 1914, Mr. Boardman was with the Magnolia Petroleum Co. at Dallas.

Tax Bill Signed

LINCOLN, Neb., Nov. 26.—Gov. R. L. Cochran this morning signed the Nebraska House Roll 6, which re-enacted the 1 cent additional gasoline tax for old age pensions, according to C. M. Sutherland & Sons, Lincoln.

The new tax applies only to importations of motor fuel beginning Nov. 26 and does not apply to inventories. The tax will expire Feb. 28, 1937.

Lubricating the 1936 Automobile

Use of Overdrive Increases; Extreme Pressure Lubes More Widely Recommended; Front Ends Revamped; Pumps, Fans, Starters More Difficult to Reach

By John W. Thompson
N. P. N. Staff Writer

THE oil company executive and the service station attendant can well afford to study the lubrication requirements of the 1936 automobiles, for there are developments and improvements in this field that warrant the attention of both men.

Particularly important is the increased use of the overdrive or cruising gear as it is sometimes called. This device, whose function is to reduce the engine speed at high car speeds, has been added to 12 models on 7 makes of 1936 cars. There are now 21 models using the overdrive, including Auburn, which uses the dual ratio rear axle to accomplish the same result.

With the exception of Auburn and Cord, the overdrive is located in connection with the transmission. In most cases the use of the overdrive necessitates a change in the oil specification for the transmission to a low cold test S.A.E. 50 for winter and an S.A.E. 70 for summer.

The overdrive also represents a substantial additional profit for service stations. Unit capacities average about 3 pints. Frequent checks of the oil level of the transmission overdrive are urged by car manufacturers.

The use of extreme pressure lubricants also continues to increase. Six new models, representing five makes of 1936 cars, have been added to the list of users of E.P. lubricants. The Chrysler airstream six, DeSoto airstream, and the Lincoln-Zephyr are now specifying it for the rear axle, while the Hudson and Terraplane models now require it for transmission and rear axle. There are now 28 models of 14 makes of cars which specify E.P. lubricants for transmission or rear axle or both. Packard uses this type of lubricant in the rear axle and steering gear.

On the Nash and Graham models, where the overdrive is used, the attendant is particularly cautioned *against* the use of an extreme pressure lubricant in the transmission. Conversely all car manufacturers are emphatically urging the use of E.P. lubricants wherever they are specified.

Due to the increased use of the overdrive on the transmission, many cars now have removed the emergency brake from the drive shaft and are now using a brake cable to actuate the shoes on the rear wheel drums. The brake cables require periodic lubrication with engine oil, chassis lubricant, or graphite grease, depending on the make of car.

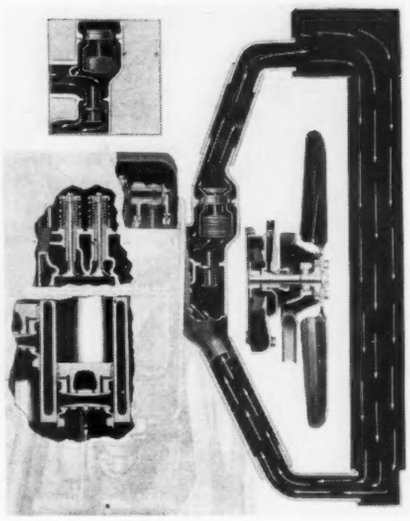
Hydraulic brakes are now newly featured on Buick, Cadillac (except the V-16), Hudson, Terraplane, and Chevrolet. This means the elimination of many linkage points that formerly required lubrication. On the new hydraulic brakes the wheel

brake cylinders vary in size to allow a more uniform brake pressure on all wheels, particularly in the case of quick stops.

Light engine oils continue on their wave of popularity, with 10W and 20W predominating for winter use and S.A.E. 20 and 30 for summer. On Auburn, Buick, and Ford the crankcase specifications go to an S.A.E. 40 for summer operation. Chevrolet, mainly interested in light oils for winter driving, is now specifying an S.A.E. 30 for high summer temperatures. Last year Chevrolet specified nothing heavier than an S.A.E. 20. This change is not regarded as significant, for Chevrolet recommends S.A.E. 30 only for temperatures consistently above 50 degrees.

Many car manufacturers, particularly Chrysler and General Motors, are now urging car owners to select an oil which agrees as closely as possible with the recommendations for the atmospheric temperature range most likely to be encountered. For example, on the Pontiac, if the present temperature is 35 degrees and the expected temperature which the car is to encounter is likely to be 25 degrees, it is recommended that a 20W oil be used, rather than refilling with S.A.E. 20 which is specified at the present prevailing temperature.

Buick recommends changing the oil every three months. Chevrolet does not designate any definite period for oil changes but states that the frequency with which the oil should be changed is governed by the mechanical condition of the car and on how carefully the driver handles it and cares for it.



The cooling system on the new Buick, showing the water jacketing around the valve chambers and the cylinder walls. The thermostat is shown in the open position in the large illustration, while the insert shows it closed

Pontiac, likewise, leaves the time for oil changing up to the motorist, or the attendant at the station. Pontiac states that the crankcase should be drained and refilled when inspection indicates the oil no longer possesses good lubricating qualities, and this point will vary according to type of driving and climatic conditions. Another to preach this gospel is Oldsmobile.

With the advent of longer water jackets, automatic thermostatic temperature control, automatic choke, air cleaner, and improved crankcase ventilation, car manufacturers feel safe in recommending this method of determining the necessity of changing engine oil, for they claim the oil is maintained at a more even temperature as a result of these devices and therefore does not break down as readily.

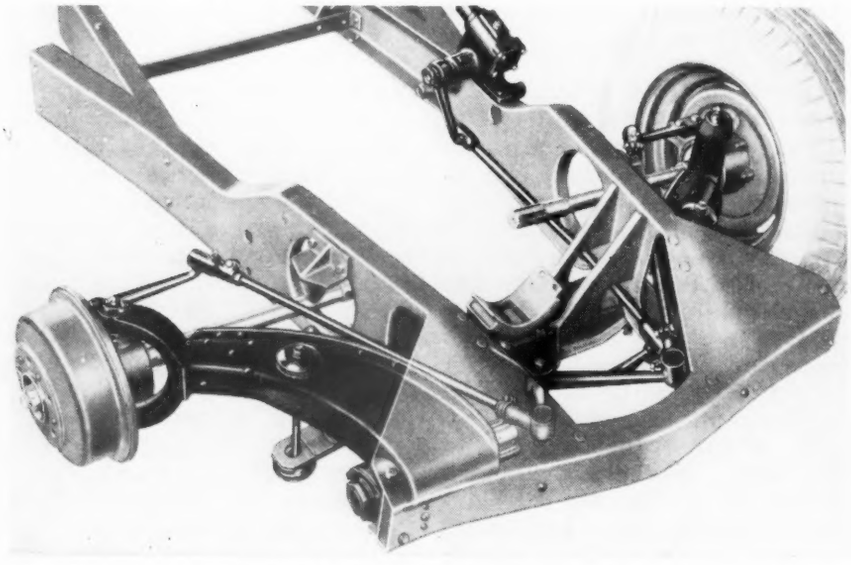
On many cars, particularly those just mentioned, the manufacturers state that the selection of a crankcase oil for winter should be based primarily on easy starting characteristics.

There are few changes in shackle types for 1936. The threaded shackle which was used on 30 models last year is now used on 31. Where the metal shackle (bolt and bushing) was used on 10 models last year, it is now only used on 5. Ten models now are equipped with rubber shackles, as against 11 last year. The ball bearing and the metal and rubber shackles are each used on 3 models, the same as last year.

Steering linkage has undergone some changes, particularly on the Plymouth, Dodge, DeSoto Airstream, and the large Cadillacs. The latter is equipped with a universal jointed shaft on which the joints are permanently sealed and require no lubrication.

Individual front wheel suspension continues on the Chrysler and DeSoto Airstream models, Cadillac, LaSalle, Oldsmobile, Buick, Pontiac 8 and deluxe 6, and the Chevrolet Master. The new type of front springing introduced last year by Packard 120 and by Studebaker are continued this year.

Hudson and Terraplane have introduced a unique new front spring suspension on their 1936 models. The springs are of the conventional type and are shackled at both ends. The axle is held in position by two drop-forged radius arms, the front end of the arms being attached to the axle by lubricated pins and the rear ends carried in rubber-bushed brackets on the frame. The spring pads are mounted on lubricated journals



View of the front end chassis of the new Cord front wheel drive car, showing the independently sprung front wheels, center steering, front engine mounting, and transverse springing

on the axle instead of being rigidly attached to it.

On Dodge and Plymouth the front springs are now shackled at the front instead of at the rear of the left front spring on these models to absorb road shock.

Because of the continued tendency toward streamlining and deeply skirted fenders, the use of a lift in lubricating the new cars is imperative if time is to enter into the service station operation. Rear wheel cover plates, however, are not as much in evidence this year.

On the new Lincoln-Zephyr a turn of the dummy radiator ornament and a lift of the "lid" exposes the entire top of the engine. Water and oil fill pipes are easily accessible but the attendant will experience some difficulty in lubricating the water pumps, fan, and starter bearings. At the top of the valve chamber at the center and facing to the left is an oil level indicator consisting of a red ball on top of a plunger behind which is a marked guage plate, so that the attendant, upon lifting the hood, can determine at a glance the level of the oil in the crankcase.

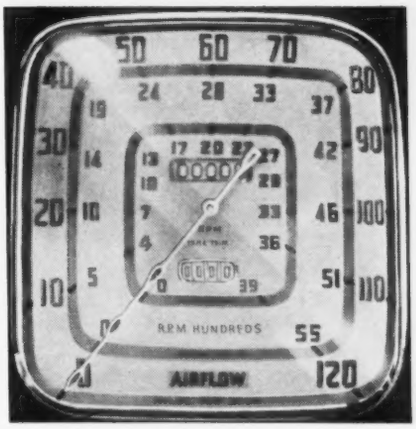
On the Pontiac 8, equipped with sealed cooling, the attendant is cautioned to remove the radiator cap slowly as there may be steam pressure in the system. A partial turn of the cap breaks the seal and allows any pressure in the system to escape through the overflow pipe. On practically all 1936 cars the radiator cap is located under the hood.

Needle bearing universal joints are used in practically all 1936 cars. It is not necessary to lubricate these bearings, except at wide mileage intervals. Some of the joints are equipped with fittings, while others require the removal of a plug to be replaced by a fitting for lubrication. A few joints must be taken apart in order to be lubricated.

Following are some of the important points on lubrication of the individual cars, thus far released by the manufacturers, that will aid the station attendant in giving the proper attention to the 1936 models.

Auburn

Lubrication requirements on the Auburn follow the pattern



The Chrysler Airflow speedometer registers the engine r.p.m. in high gear and with overdrive at any given car speed

set for the 1935 models. The dual ratio rear axle continues as optional equipment on all models. An extreme pressure lubricant is required for the rear axle regardless of whether or not it is equipped with the dual ratio drive.

Shacles are all rubber bushed with no lubrication required. The Auburn has 10 lubrication points requiring attention at 500-mile intervals. Four of these points are pressure fittings on the tie rod and drag link and require a semi-fluid chassis lubricant. The water pump now has a packless bearing which requires a semi-fluid chassis lubricant. The other 500-mile points include the clutch release bearing, starting motor, generator and king pin bushings, which take a medium heavy engine oil. The king pin bushings are lubricated by wicks which are fed from an oil reservoir.

Front wheel bearings require lubrication with a shot fibre wheel bearing grease every 4000 miles, and the rear wheel bearings are to be serviced with a light fibre grease type of wheel bearing lubricant every 5000 miles. The steering gear requires a special steering gear lubricant.

For summer the engine oil specifications call for an S.A.E. 30, 40, and 50. For winter, down to 10 degrees, a 40, 30, and 20 low cold test oil is recommended; and below 10 degrees a 20W oil is specified.

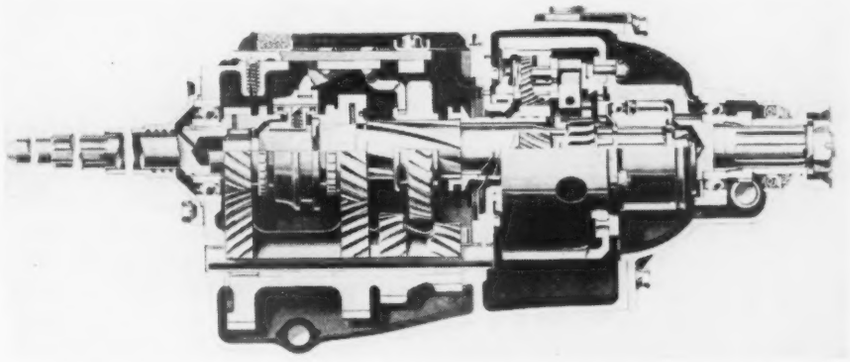
Auburn again has the supercharger on one model, which is claimed to boost the horsepower of the 115 horsepower engine to 150.

Buick

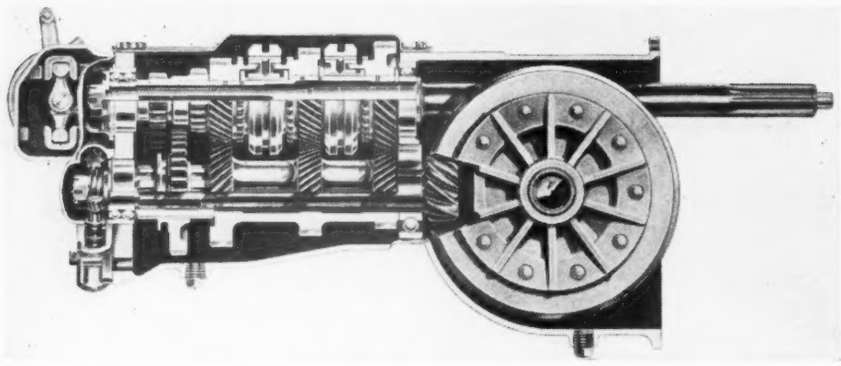
On the larger Buicks, series 60, 80, and 90, the water pump has been moved to a new location directly behind the fan, as it is on the small series 40 Buick. On all models except the 40, a fitting is provided to lubricate the fan and pump which requires a water pump graphite lubricant at 1000-mile intervals. On the series 40 two oil cups, requiring engine oil every 1000 miles, are provided for the fan and pump.

With the addition of hydraulic brakes on all 1936 Buicks, the lubrication of brake cables and the power brake cylinder has been eliminated. The point on the brake equalizer shaft has also been eliminated, as has the steering arm lubrication fitting which last year appeared on the three large models directly under the center of the front end suspension system.

On all 1936 models the rear wheel bearings, as well as the front, require lubrication every



On the Chrysler 6 and 8 this overdrive unit is built into the rear of the transmission case. Sun and planet type of gearing is used and the gears are helically cut to insure quieter operation



Transmission and differential of the new Cord front drive car are contained in one unit. The transmission has four forward speeds

six months. To lubricate the rear wheel bearings necessitates the removal of the axle shaft, wheel, wheel hub and drum as an assembly and applying one tablespoon of wheel bearing lubricant to each roller bearing. At the same time the felt oil seals should be inspected for leakage or wear.

Transmission and rear axle specifications remain the same as last year, requiring an S.A.E. 160 for summer and 90 winter. Transmission capacities have changed, with the exception of the series 40, which still remains 1¾ pints. On the 60, 80, and 90 series, the capacity is 2½ pints, whereas last year they ranged from 1¾ to 4 pints.

The rear axle capacity of the series 40 remains at 3 pints. The series 60 and 80 rear axles now haxe a capacity of 4 pints, and the series 90, 4½ pints. Last year they ranged from 3 to 5½ pints.

Crankcase capacities remain the same. Buick continues to recommend oil changes every 3 months. Except for minor shifts in the temperature brackets, engine oil specifications remain the same as last year. When the minimum and maximum limits are 30 and 80 degrees and S.A.E. 20 oil is specified, and when temperatures are consistently above 50 degrees, an S.A.E. 30 oil is specified. For winter, 10W and 20W are recommended.

Cooling system capacities have changed slightly. The series 40, which last year had a capacity of 28 pints, now holds 26 pints. The new series 60, 80, and 90 each have a cooling capacity of 34 pints, as compared to 31, 36, and 46 for the corresponding models last year. (For complete Buick story see NATIONAL PETROLEUM NEWS, page 35, October 9, 1935 issue).

Cadillac

The major interest in Cadillac this year, from a lubrication standpoint, centers around the new medium-priced series 60, model. This car is equipped with the coil spring type of individual front wheel suspension on which there are 20 points with pressure fittings to be lubricated, including the steering linkage and king pins.

A fitting is provided for the timer - distributor which requires a water pump lubricant, as does the water pump. While no lubrication is required on the universal joints, the spline must be lubricated with a chassis lubricant. The front of the rear springs is rubber bushed, but the rear of the rear springs each have shackles requiring a chassis lubricant. An engine oil is specified for lubricating the starter and generator, and also the pedal shaft and connections. On the left side of the clutch housing is a grease cup for lubricating the clutch release fork with a wheel bearing grease. All of the above mentioned points are to be serviced at 1000-mile intervals.

Transmission and rear axle specifications call for an S.A.E. 160 for temperature above 20 degrees. For below 20 degrees and S.A.E. 90 is specified. Front wheel bearings are to be cleaned and repacked with a wheel bearing lubricant every 6000 miles.

Engine oil specifications on all Cadillac models are the same. For temperatures consistently above 70 degrees an S.A.E. 40 is recommended; for maximum and minimum temperature limits of 110 and 40 degrees, an S.A.E. 30; between 80 and 30 degrees, an S.A.E. 20; between 80 and 10 degrees, a 20W; and between 45 and minus 10, a 10W oil. Oil changes are recommended every 2000 miles.

On the larger Cadillacs two universal joints have been added to the steering shaft. The joints are sealed and require no lubrication attention.

Capacities on the new series 60 Cadillac are as follows: fuel tank, 21 gal.; crankcase, 7 qts.; cooling system, 30 qts.; transmission, 2½ pints; rear axle, 5 pints. The fuel tanks on the larger models have been decreased from 30 to 25 gallons. On the Fleetwood V-8 the crankcase capacity has been reduced from 8 to 7 quarts, and the cooling system increased from 19 to 29 quarts. On all large Cadillacs the rear axle capacity has been reduced from 6 to 5 pints.

Chevrolet

New features on the Chevrolet for 1936 are: Hydraulic brakes, higher engine compression ratio (6 to 1), balanced carburetor, full length water jacketing, and a method for cooling the oil supply line to the rocker arm shaft. The new balanced carburetor, aimed at greater fuel economy, is designed so that air pressure in the float chamber is balanced with that inside the carburetor intake to effect a constant ratio of air to gasoline in the fuel mixture and to offset the choking effect that gradually increases as the air cleaner becomes clogged with dust. Full length water jacketing, plus the running of the running of the oil supply line to the rocker arm shaft through the cylinder block where it is surrounded by water, are claimed by Chevrolet to keep the oil from 50 to 60 degrees cooler.

Chevrolet's knee action units remain unchanged except for a new method of attaching the wheel spindle to the support arm. The spindle is now pressed into the arm under 10,000 pounds pressure and the

inner end peened over. Knee action remains optional equipment on the master model. The standard model has conventional type springs, as last year. On the master model with conventional springing the shackles on the front springs are located on the front, and on the standard they are at the rear of the front springs. Spring bolts on the front springs require lubrication, but those on the rear springs do not, having been eliminated from the master model of last year.

On the knee action units the front spring unit spindle bushing which last year required lubrication every 10,000 miles, now requires lubrication at 5000-mile intervals. Petroleum jelly is again specified. A slotted pipe plug is installed at this point to prevent over-lubrication, generally occasioned by the use of a pressure gun. Transmission and differential specifications remain the same as last year.

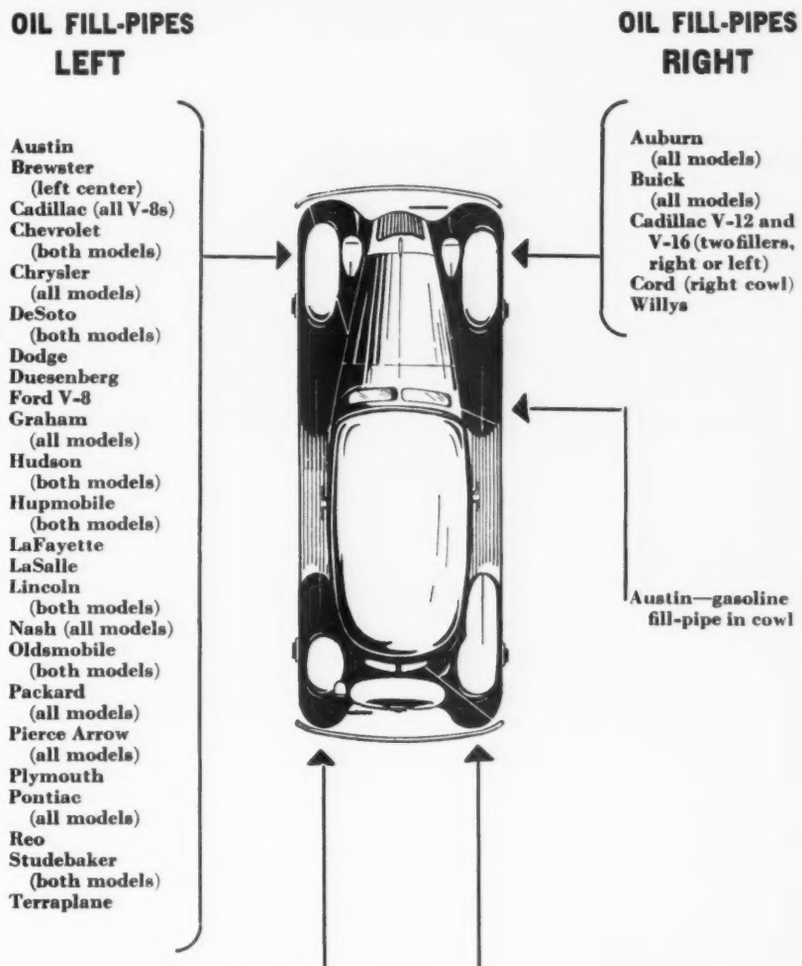
Chevrolet again uses the carbon type of clutch throwout bearing which is lubricated from an oil reservoir. It can be reached by removing the toe board cover plate and the inspection plate on the clutch housing, and only requires refilling when a squeaking noise occurs as the clutch is released. An S.A.E. 160 oil is required at this point for summer and an S.A.E. 90 for winter.

While light oils are still specified for winter, Chevrolet now recommends an S.A.E. 30 for summer when temperatures are consistently above 50 degrees. S.A.E. 20 and 20W may also be used during the summer but are particularly recommended for spring and fall when temperatures frequently drop to 32 degrees and below. If the lowest anticipated temperature is zero, a 10W oil is recommended. Chevrolet does not designate any definite interval for oil changes. The company states that the need for changing is dependent upon the mechanical condition of the car and upon the handling and care it receives.

The fuel tank capacity on the standard model has been increased from 11 to 14 gallons. The cooling system on all

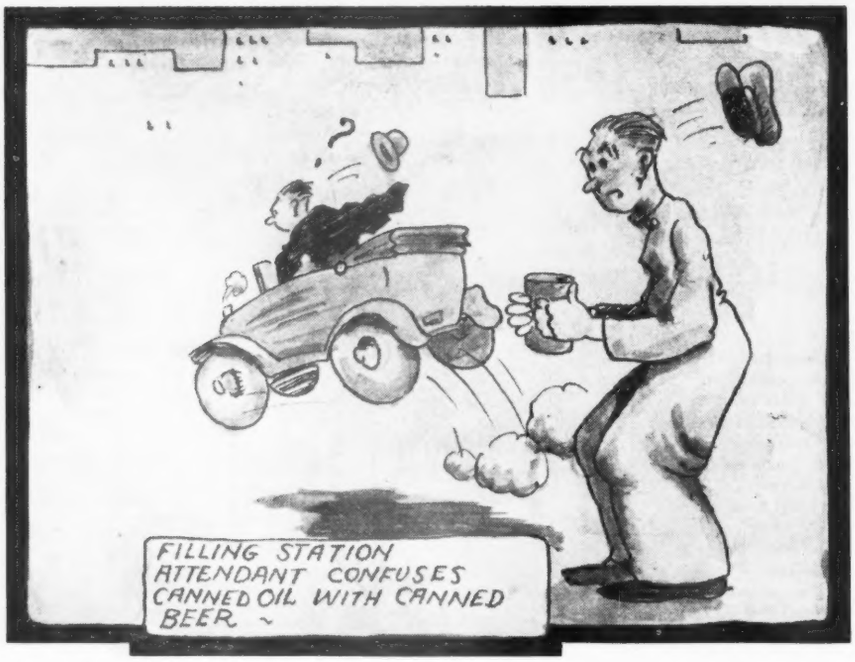
WHERE TO "FILL 'EM UP" WHEN 1936 CARS ROLL IN

Compiled by William Harrigan, Technical Division, at the New York Auto Show



Reproduced from The Texaco Mission

Service station men who attempt to memorize the diagram above will find it easiest to accept left-side gasoline and oil fill-pipes as standard and concentrate on learning the exceptions on the right side.



models is now 15 quarts. An additional drain cock has been added and is located on the left side of the cylinder block near the center. (For complete Chevrolet story see NATIONAL PETROLEUM NEWS, page 48, Nov. 6, 1935 issue).

Chrysler

A hypoid rear axle is now used on the Chrysler airstream six as well as the eight. This necessitates the use of an extreme pressure lubricant at this point for each of these cars. It is recommended that an S.A.E. 90 E.P. lubricant be used for summer and winter, and where only moderately low temperatures prevail an S.A.E. 110 E.P. may be used.

The overdrive is now optional equipment on all Chrysler models for 1936, except the Airflow Imperial model, on which it is standard. On the airstream models the transmission capacity without overdrive is 2½ pints, and with the overdrive it is 4½ pints. Without overdrive, the lubrication specifications of the transmission on all models call for an S.A.E. 160 for summer, S.A.E. 90 for winter with temperatures above zero, and an S.A.E. 80 for temperatures below zero.

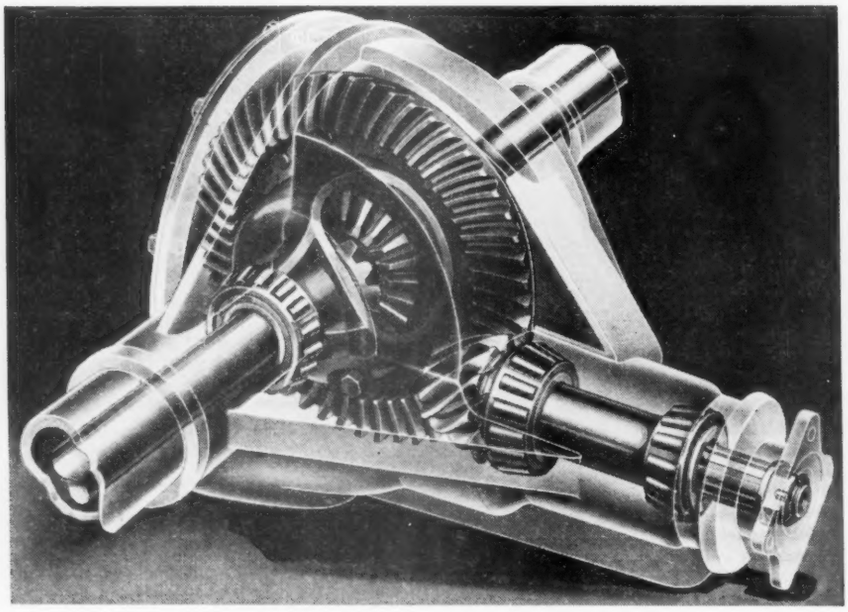
With the overdrive, the transmission lubrication specifications change materially. For summer it is recommended that an S.A.E. 70 aircraft engine oil or an S.A.E. 70 oil be used. For winter, with temperatures down to zero, an S.A.E. 50 aircraft engine oil with low cold test maximum of 10 degrees is specified. For temperatures below 10F. it is recommended that an 80 per cent S.A.E. 50 aircraft engine oil with low cold test be used with 20 per cent 10W engine oil; or, a 90 per cent S.A.E. 50 aircraft engine oil with low cold test plus 10 per cent kerosine.

In connection with the hypoid rear axles where E.P. lubes are used, Chrysler states that it is important to drain and flush out the rear axle thoroughly with flushing oil (not kerosine), and to completely remove the flushing oil and refill with the proper grade lubricant at least once every 6000 miles.

On the airstream models the front end independent springing has remained the same, except for minor refinements. The steering mechanism, however, has been simplified by the removal of the intermediate steering arm. The tie rods are now directly connected to a short drag link, thus eliminating two lubrication points.

Last year four pressure fittings were required to lubricate the pedal and torque shaft. On the 1936 models there are only two points. The oil filter cartridge, which formerly required replacement at 10,000-mile intervals, is now recommended for renewal at every 8000 miles. The clutch release bearing, with a grease cup attachment requiring a one turn down every 6000 miles, remains the same. A fitting is provided for the water pump, which specifically requires the use of water pump grease.

Engine oil specifications vary slightly over last year. An S.A.E. 30 oil is recommended for summer between temperatures ranging from 40 to 110 degrees. For continued high speed driving, or between temperatures of 70 and 110 degrees, an S.A.E. 40 is specified.



Hupmobile's hypoid semi-floating rear axle, which requires an extreme pressure lubricant. Optional gear ratios of 4.09 and 4.27 are available

For winter operation, between 32 and 80 degrees and S.A.E. 20 or 20W is recommended; between 10 and 80 degrees, 20W; between minus 10 and 45 degrees, 10W; and between minus 30 and 20 degrees, 10W plus 10 per cent kerosine.

Except for the cooling system, which has been increased from 4¼ to 4¾ gallons, the capacities remain the same as last year.

Cord

The new front drive Cord, returning to the fold after an absence of a few years, has a number of improvements. Of chief interest is the Lycoming V-8 engine and driving plant. The differential and transmission are cast in one piece and located just ahead of the engine. The entire power plant is a closely coupled, single motive unit, and with the long drive shaft eliminated. The two shafts which deliver power to the front wheels are driven through four constant velocity universal joints (two on each shaft).

The car has a new four-speed transmission. The fourth, or cruising speed is designed to reduce engine speed for a given car speed and thus reduce fuel and oil consumption. Gear shifting is done by remote control. The ratio selecting unit is on the steering wheel column directly below the wheel rim, and is similar in principle to that used on Hudson.

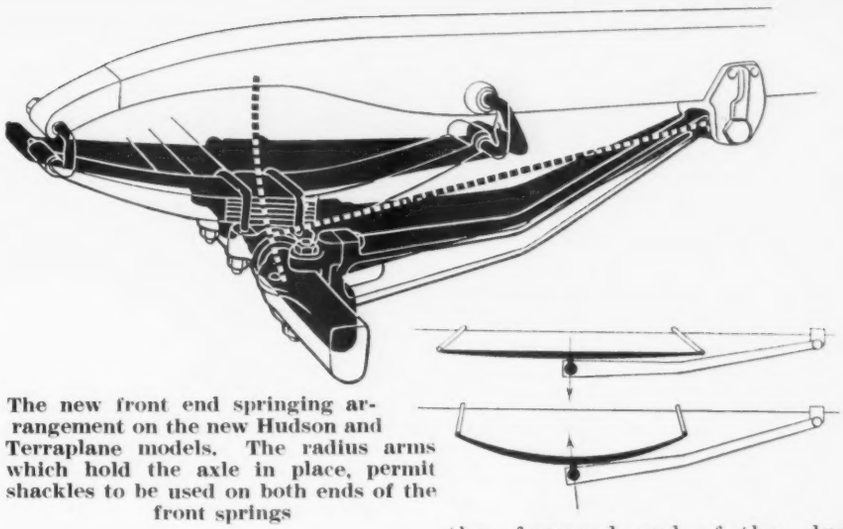
The Cord crankcase capacity is 7 quarts. Above temperatures of 90 F. an S. A. E. 40 oil is recommended. Between 60 and 90 degrees and S. A. E. 30 is specified; between 10 and 60 degrees, a 20W oil; and below 10 degrees, a 10W.

In keeping with the streamlining of the car the gasoline fill pipe is out of sight, and may be reached by unlocking a small door on the rear panel. Water and oil may be added without raising the hood. A dummy ventilator panel on the right side open to provide easy access to these two points. Complete specifications for lubrication of the Cord have not yet been released by the manufacturer.

DeSoto

With the addition of a hypoid rear axle to the airstream DeSoto, both models now require an E. P. lubricant in the rear axle. The overdrive is optional equipment on both the airstream and airflow models, being new to the airstream for 1936.

In view of these changes all lubrication specifications and changes as outlined for the Chrysler apply to the DeSoto. This also follows for capacities.



The new front end springing arrangement on the new Hudson and Terraplane models. The radius arms which hold the axle in place, permit shackles to be used on both ends of the front springs

Dodge

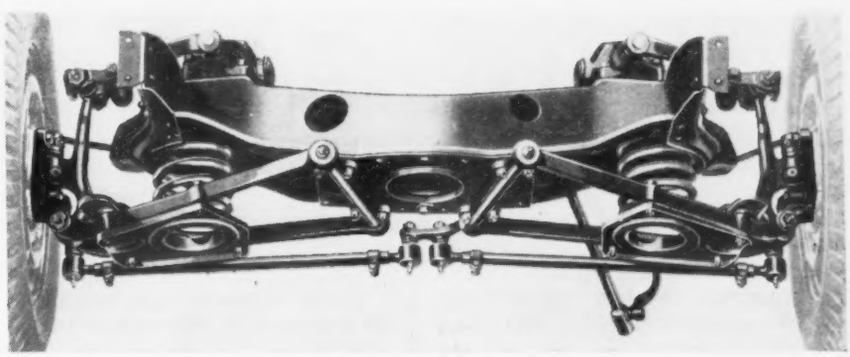
The steering mechanism of the new Dodge has been improved by mounting the front springs with the shackles at the front instead of the rear, and by the addition of a steering shock eliminator at the rear of the left front spring. The ride stabilizer is now mounted on the shock absorber arms instead of being attached to the tubular front axle as in the past.

With the shift in front shackle location, the drag link of the new steering system now moves in the car's line of travel. The axle movement now follows the arc of a circle whose center is at the rear of the front spring mounting. Thus the arc described by the axle is practically the same as that described by the forward end of the drag link, making the steering system more efficient.

Shifting the front spring shackles now places two pressure fittings at the front of each front spring. The rear of the right front spring now has one fitting, and the rear of the left front spring, where the shock eliminator is located, has two fittings. Two fittings are now provided on each front shock absorber linkage. The steering drag link, which formerly was located parallel to the front axle, is now perpendicular to it and has a pressure fitting on each end.

Two new pressure fittings are added to the pedal shaft this year, and require a chassis lubricant. It is recommended that the oil filter cartridge be replaced every 8000 miles, instead of 10,000, as formerly. The crankcase capacity is 5 quarts as previously. Engine oil specifications are similar to those of the new Chrysler.

Transmission capacity is 2½ pints, while that of the rear axle is 3¼ pints. Lubrication recommendations for these units call for an S. A. E. 160 lubricant to be used in summer



The independent front wheel spring suspension on the 1936 Oldsmobile

and an S. A. E. 90 for winter. For extreme winter below zero an S. A. E. 80 is specified for the transmission. The steering gear should be lubricated with an S. A. E. 160 fluid gear lubricant in summer and an S. A. E. 90 for winter. It is suggested that engine oil be added in extreme winter.

It is important that only water pump grease be used to lubricate the water pump. The roller bearing universal joints require one ounce of special universal joint or fibre grease every 12,000 miles. The cooling system capacity of 3¾ gallons, and the fuel tank capacity of 15 gallons, remain the same as last year.

Ford

Improved steering, a transmission with helical gears in all speeds, and steel wheels, are the principal Ford talking points for 1936, none of which directly affect the lubrication requirements. The Ford engine is unchanged except that two quarts have been added to the cooling system capacity.

Lubrication changes are few. The two water pumps each have an oil cup in addition to the pressure fitting which is continued from last year. These cups require the addition of engine oil every 1000 miles. On the previous model the clutch and brake pedal shaft was equipped with two pressure fittings. The 1936 Ford has only one fitting, located at the left end of the shaft. Two new fittings are to be found on the clutch release shaft, located on each side of the clutch housing. These points require a pressure gun lubricant every 1000 miles.

Except for minor shifts in the temperature brackets the engine oil specifications remain the same. For prevailing temperatures above 90 F., an S. A. E. 50 oil is recommended; 100 to 30 degrees, an S. A. E. 40; 65 to 20 degrees, S. A. E. 30; 50 degrees to zero, S. A. E. 20 or 20W; 30 to minus 15 degrees, S. A. E. 10 or 10W; minus 10 degrees or lower, 10W plus 10 per cent kerosine. The company suggests that while the above engine oil recommendations are for normal driving conditions, the intermittent driver will find it necessary to use oil one or two grades lighter. Oil changes are recommended every 2000 miles.

An extreme pressure lubricant is again required for the rear axle this year. For winter an S. A. E. 110 or 90 E. P. is specified, and for summer an S. A. E. 160 E. P. (For the complete Ford story see NATIONAL PETROLEUM NEWS, page 33, October 30, 1935, issue).

Graham

The series 80, 90, and 110 constitute the Graham line for 1936. All have six cylinder engines, the 90 and 110 having the same engine except that the latter is snupercharged. The supercharger, which boosts the horsepower from 85 to 110, offers no lubrication problem as it is lubricated from the engine oil pump.

Graham offers the overdrive as optional equipment on the series 90 and 110 models for the first time. When transmissions on these models are not equipped with overdrive, the capacities are 2½ pints, while the capacity of the small Graham is 1½ pints. Specifications call for an S. A. E. 160 extreme pressure lubricant for summer, a 90 E. P. for winter, and a 70 E. P. for below zero. When the overdrive is used E. P. lubricants should not be used in the transmission. Instead an S. A. E. 70 oil should be used in summer and an S. A. E. 50 in winter. Capacities with the overdrive on both of the larger models are 3½ pints.

Extreme pressure lubricants must be used in the rear axle on all models. For summer an S. A. E. 160 E. P. lubricant is specified, and for winter an S. A. E. 90 E. P. Transmission and rear axle should be drained and refilled every 6000 miles. Engine oil is recommended for change every 1000 miles in summer and 500 miles in winter. An S. A. E. 40 is specified for summer, S. A. E. 30 for spring and fall, 20W for winter down to zero, and 10W for below zero. Crankcase capacity is 5 quarts on all models, and the oil fill pipe is now located on the left hand side on all models.

The front universal joint spline, except on the series 80, requires a chassis lubricant every 2500 miles, and the two universal joints on all models should be disassembled, inspected and repacked with an S. A. E. 160 oil every 20,000 miles.

The fan and water pump on the series 90 and 110 are lubricated through one pressure fitting with a chassis lubricant. On the series 80 an engine oil is required for the fan and a special water pump grease for the water pump. The clutch release bearing requires no lubrication. Rear wheel bearings on the series 80 require a wheel bearing grease, while on the other two models no provision is made for lubrication of these points from the exterior. There are 13 pressure fittings on each of the models which take a chassis lubricant. All shackles are rubber and require no lubrication attention.

Cooling capacity on the series 80 is 15 quarts; on the series

Extreme Pressure Lubricants Specified for These 1936 Cars

Auburn 6—rear axle
Auburn 8—rear axle
*Chrysler Airstream 6—rear axle
Chrysler Airstream 8—rear axle
*DeSoto Airstream—rear axle
DeSoto Airflow—rear axle
Ford—rear axle
Graham 80—transmission and rear axle
‡Graham 90—transmission and rear axle
‡Graham 110 — transmission and rear axle
*Hudson 6—transmission and rear axle
*Hudson 8—transmission and rear axle
Hupmobile 6—rear axle
Hupmobile 8—rear axle
Lafayette—transmission and rear axle
*Lincoln—Zephyr—rear axle
‡Nash 400—transmission and rear axle
‡Nash Ambassador 6—transmission and rear axle
‡Nash Ambassador 8—transmission and rear axle
Oldsmobile 6—rear axle
Oldsmobile 8—rear axle
Packard 120—rear axle and steering gear
Packard 8—rear axle and steering gear
Packard super 8—rear axle and steering gear
Packard 12—rear axle and steering gear
Pierce Arrow 8—rear axle
Pierce Arrow 1602—rear axle
Pierce Arrow 1603—rear axle
*Terraplane—transmission and rear axle

*New.
‡When equipped with overdrive do not use E. P. lubricant in transmission.

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90 and 110, 15½ quarts. Fuel tank capacity on the series 80 is 12 gallons; on the series 90 and 110, 15 gallons.

Hudson

Most important considerations in the lubrication of the 1936 Hudson are the new front end suspension system, which was explained briefly in the forepart of this article, and the change of transmission and differential lubrication specifications to the use of extreme pressure lubricants. The Hudson models are now all equipped with hydraulic brakes. The "electric hand" type of shift control continues as optional equipment.

New transmission specifications call for extreme pressure lubricants for both summer and winter; S. A. E. 90 for summer and 80 for winter. Capacity remains the same at 3 pints. Rear axle recommendations also specify E. P. lubes; S. A. E. 110 for summer, and 90 for winter. Capacity is the same, 3 pints.

Engine oil specifications vary slightly from last year. When the minimum expected temperature is 40 degrees, an S. A. E. 30 oil is recommended; down to zero, a 20W oil; down to minus 15 degrees, 20W; below minus 15 degrees, 10 W plus 10 per cent kerosine.

On the new front end suspension there are two pressure fittings on each end of each front spring. On each radius arm, where the arm joins the axle, there is a pivot pin which requires a viscous grease every 1000 miles. Directly beneath each front spring at the saddle, will be found a pressure fitting which is to lubricate the bearing upon which the spring rotates on the axle. This also requires a viscous grease at 1000-mile intervals. No lubrication is required at the points where the radius arms join the frame.

The water pump which formerly required a water pump grease now takes an aluminum soap grease. The clutch release bearing now requires an aluminum soap grease, where formerly a light grease was specified.

New this year also are the specifications for steering gear lubricant. An extreme pressure lubricant is now required; S.

A. E. 110 for summer, and 90 for winter.

Tie rod ends are lubricated and sealed when assembled and require no lubrication attention. The Hudson 8 has an engine oil capacity of nine quarts, and cooling system capacity of five gallons. The Hudson 6 has a crankcase capacity of six quarts, and cooling capacity of 3¼ gallons.

The fuel tank capacity is now 16 gallons on all models.

Hupmobile

Official lubrication information on the 1936 Hupmobiles has not yet been released by the manufacturer. However, it is known that extreme pressure lubricants will again be specified for the rear axle this year. Company engineers state that, with the exception of the transmission, lubrication requirements will be practically the same as last year.

Hupmobile will have an optional overdrive available for 1936 on both the 6 and 8 models. It is important to note that Hupmobile now specifies an S. A. E. 70 oil for summer and S. A. E. 50 for winter in the transmission, both with and without overdrive equipment.

LaFayette

The overdrive has been discontinued as optional equipment on the LaFayette for 1936. Lubrication changes are few. The use of an extreme pressure lubricant, S.A.E. 90 for summer and winter, is again specified for the rear axle and transmission.

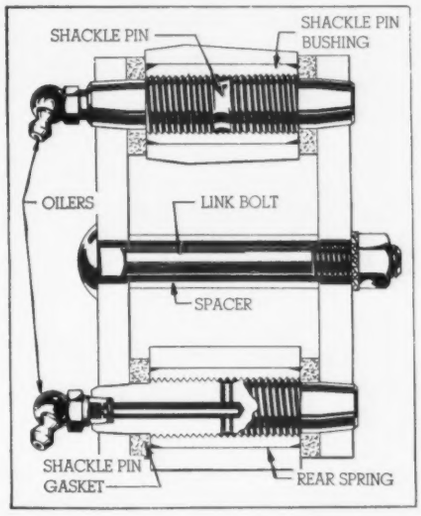
The shock eliminator lubrication fitting at the left end of the tie rod has been eliminated, and two pressure fittings have been added to the tie rod—one at each end. These require a heavy oil. One new fitting has been added to the clutch pedal shaft, requiring a heavy oil every 1000 miles.

For summer driving an S.A.E. 30 engine oil is specified, and for winter an S.A.E. 20 low cold test oil. Oil changes are recommended every 1000 miles. The water pump again requires a water pump lubricant, used sparingly. The universal joint spline requires lubrication every 1000 miles with a heavy oil. It was formerly lubricated every 3000 miles. The universal joint bearings are self-lubricating.

It is recommended that the transmission and differential be checked every 1000 miles to determine the condition of the oil. Both units should be drained, flushed, and refilled at 5000-mile intervals. Following the design introduced last year, front and rear springs have special inserts between the leaves that eliminate the need of lubrication at these points.

LaSalle

The new LaSalle follows closely the lubrication requirements of the previous model, with the exception of minor changes. Where only one lubrication fitting appeared last year on the rear end of the rear spring, there are now two pressure fittings on the rear of each rear spring. The pedal shaft was formerly lubricated through a pressure fitting but new instructions call for the lubrication of all clevises and pedals with engine oil applied through the holes provided for that purpose. The clutch release shaft now is equipped with a pressure fitting for chassis lubricant every 1000 miles. This point was formerly lubricated with engine oil. Water pump lubricant, instead of wheel bearing lubricant, is now required for the timer-distributor shaft.



Sleeve spacers have been added to the rear spring shackles on the Packard 120 model through which the center clamping bolt passes. This permits proper tightening of the bolt without bending the outside shackle plates

The independent front wheel suspension, including the steering linkage, has 18 fittings under the chassis which require a chassis lubricant, the same as last year. All capacities remain the same as last year. Lubrication requirements for the crankcase, transmission and rear axle are identical to those required on the Cadillac 60 model.

Lincoln

Lincoln has introduced a new model this year, known as the Lincoln-Zephyr, in the medium-priced class. The larger Lincolns present no new lubrication problems, but the Zephyr is entirely new as far as Lincoln is concerned.

Being a product of Ford, and being manufactured on a production basis, the Lincoln-Zephyr has practically the same lubricating system as the 1936 Ford. The engine a V-12, is made accessible by means of a hood which lifts up like a lid and covers the entire top of the hood. This lid hinges at the rear and opened by turning and lifting the dummy radiator ornament. Water and oil fill pipes are within easy reach when the hood is opened. However the station attendant will have some difficulty in getting at the fan, water pumps, steering gear, distributor, and generator, for lubrication. These points are set well down in the hood, which has no movable sides as in the conventional type. The fan is located on the same line with the crankshaft and the generator is driven by a belt instead of being on the fan shaft as is the case on the Ford.

Facing to the left, on the top of the valve chamber, there is a red ball indicator which shows at a glance the level of the oil in the crankcase. Springs are of the transverse type, similar to Ford, and the shackles require no lubrication. An extreme pressure lubricant is required for the rear axle. All specifications for type of lubricant are similar to those of the Ford.

Capacities on the Lincoln-Zephyr are: crankcase, 7 quarts; cooling system, 27 quarts; fuel tank, 19 gallons;

transmission, 2½ pints; and differential 2 pints.

Nash

Few lubrication changes are found on the Nash for 1936. The overdrive is continued as optional equipment on all models with a word of caution that an extreme pressure lubricant should not be used in the overdrive and transmission. For this unit an S.A.E. 70 motor oil is specified for summer and a low cold test S.A.E. 50 for winter. When the transmission is not equipped with the overdrive unit an S.A.E. 90 extreme pressure lubricant must be used. The rear axle requires an extreme pressure lubricant of similar specification. The transmission, which formerly had a capacity of 3 pounds, now takes 4 pounds. When the overdrive is used the transmission has a capacity of 3 pounds and the overdrive 2½ pounds. The rear axle capacity has been reduced from 6 to 3 pounds.

The lubrication fitting on the water pump has been eliminated on the 1936 models. The fan bearing, which formerly required lubrication with motor oil at 2000-mile periods, now needs servicing every 3000 miles.

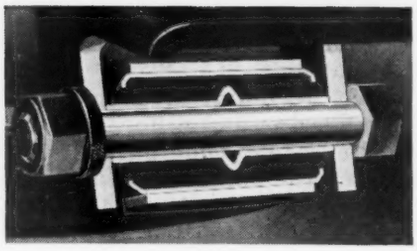
Oil and water are added to the new Nash standard models without raising the hood. Both fill pipes are located under a small hood service door at the front of the engine hood. The oil fill pipe has a cap marked "oil."

Other changes follow those of the Lafayette.

Oldsmobile

Oldsmobile is one of the increasing number who this year recommend that the engine oil be changed only when an inspection shows the oil to be thinned to a point where it no longer possesses good lubricating qualities. Engine oil specifications remain the same as last year.

On the front end suspension the lower yoke of each control arm had two pressure fittings. This year there is only one fitting at this point on each arm. There are no other changes affecting lubrication. The attendant is cautioned, however, that an extreme pressure lubricant is required in the rear axle again this year.



Pontiac uses a rubber-bushed spring bolt on the front of the rear springs

Packard

The large Packards still retain the Bijur system of centralized chassis lubrication control. On the 120 model, which is Packard's low priced car, the "SafeTfleX" system of front end suspension introduced last year, is continued. Last year there were 14 pressure fittings for lubrication of the front end suspension and the steering linkage, but some refinements in design have eliminated two of these from the steering connecting rods on the new 120 model.

A fitting is now provided for applying pressure gun grease to the universal joint spline every 10,000 miles. The rear axle, which again requires an extreme pressure lubricant on all models, has the same specifications as last year. The cooling system capacity of the 120 has been increased from 16½ to 18 quarts. Other lubrication specifications remain the same as last year.

Pierce Arrow

Lubrication information on the 1936 Pierce Arrow models is not yet available, due to the company being somewhat behind schedule on its 1936 program. However, the new models will feature new syncro-mesh transmissions with built-in free wheeling, and new overdrive. Rear axles of all Pierce Arrow models are of the hypoid type and require an extreme pressure lubricant S. A. E. 90 for summer and winter.

Plymouth

The lubrication requirements, changes, improvements, and capacities, for the new Plymouth are exactly the same as those described for the Dodge in this article.

Pontiac

Pontiac offers no important changes from a lubrication standpoint over last year. The 8 and deluxe 6 models are equipped with knee action and the standard 6 has conventional type springing.

For lubricating the front brake hub and king pin bushings it is suggested that the car be jacked up. Another new servicing operation this year has to do with the carburetor. It is suggested that the carburetor dust cover retaining screw and dust cover be removed at 10,000-mile periods and graphite grease applied through the screw hole to the pump arm countershaft. The brake cable conduits are to be lubricated with graphite grease every 10,000 miles, instead of every 5000 as formerly.

Transmission and differential requirements remain the same, but the transmission capacity has been decreased from 2½ to 1¾ pints. While Pontiac does not recommend the use of ex-

1936 Cars Equipped With Overdrive, Cruising Gear, or Dual Ratio

Auburn 6—dual ratio on rear axle (optional)
Auburn 8—dual ratio on rear axle (optional)
*Chrysler Airstream 6—overdrive (optional)
*Chrysler Airstream 8—overdrive (optional)
Chrysler Airflow 8—overdrive (optional)
Chrysler Airflow Imperial—overdrive (standard)
*Cord—cruising gear (standard)
*DeSoto Airstream—overdrive (optional)
DeSoto Airflow—overdrive (optional)
*Graham 90—overdrive (optional)
*Graham 110—overdrive (optional)
*Hupmobile 6—overdrive (optional)
*Hupmobile 8—overdrive (optional)
Nash 400—overdrive (optional)
Nash Ambassador 6—overdrive (optional)
Nash Ambassador 8—overdrive (optional)
*Pierce Arrow 8—overdrive (standard)
*Pierce Arrow 1602—overdrive (standard)
*Pierce Arrow 1603—overdrive (standard)
*Studebaker Dictator 6—overdrive (optional)
Studebaker President 8—overdrive (optional)

*New.

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N.P.N. 12-11-35

treme pressure lubricants in transmission and differential, it recognizes the fact that some oil companies are using this type of lubricant for servicing these units on all cars. With this in mind, Pontiac has issued the following precautions to take when using E. P. lubes:

(1) During each 1000-mile lubrication the rear axle and transmission lubricant must be inspected for stringiness; (2) avoid mixing the various makes of E. P. lubricants or adding one to any other type of gear oil. Experience has indicated that the special ingredients often react chemically or combine with each other to cause foaming, thickening, sludge, or other undesirable results; (3) Always flush the gear box when changing gear oil, especially when changing brands, to be assured of satisfactory results.

In determining the proper grade of engine oil to use Pontiac recommends estimating the lowest temperature expected during the period the oil is to be used. On that basis, with a maximum temperature of 110 degrees, an S. A. E. 30 oil is recommended down to 50 degrees; an S. A. E. 20 down to 30 degrees; and a 20W down to 10 degrees. Between 60 and minus 10 degrees a 10W is recommended, and between 20 and minus 30 degrees, a 10W. Pontiac then states that if in doubt use the lower S. A. E. number.

The Pontiac 8 is equipped with sealed cooling, which means that the attendant must use caution in removing the radiator cap since escaping steam may cause burns if the cap is removed too rapidly. The cap should be turned partially to break the seal and allow any pressure in the system to escape through the overflow pipe. The cap should then be removed slowly.

Reo

Two tie rod fittings have been eliminated from the new Reo Flying Cloud model. The king pins are now lubricated by an oiler in place of the former pressure fittings. The new oiler takes a light engine oil. The clutch release bearing lubrication point has been removed.

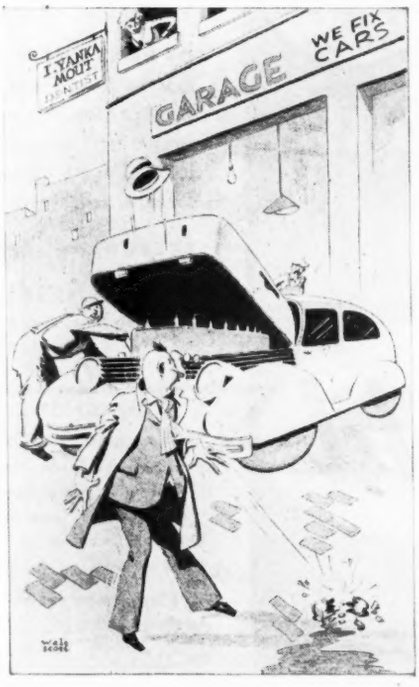
All other requirements remain the same as last year.

Studebaker

Studebaker this year offers two models, the Dictator 6 and the President 8. Free wheeling transmission with overdrive is continued as optional equipment on the President, and has now been added to the Dictator on the same basis. Where an S. A. E. 80 and 90 free wheeling lubricant were required for the transmission with overdrive last year, the new recommendations call for an S. A. E. 70 engine oil in summer and an S. A. E. 50 for winter. Transmission capacity of the Dictator without overdrive is 2½ pints; with overdrive, 6 pints. Corresponding capacities of these units on the President are 3 pints and 7 pints.

Crankcase oil specifications remain the same as last year, with no 10W or 20W being recommended for winter. S. A. E. 10 and 20 are required for cold weather.

The independent front wheel suspension introduced by Studebaker last year continues as standard equipment on the President and optional on the Dictator, and present no new lubrication problem. Lubrication of the steering knuckles, formerly done with an S. A. E. 30 engine oil, now requires an S. A. E. 110. The fan bearing on the Dictator now takes a pressure gun lubricant instead of an S. A. E. 30 oil as formerly.



Lubrication of the rear spring shackles is now required on the President, as well as on the front and rear springs of the Dictator without individual front wheel suspension. The lubrication point on the clutch release bearing has been dropped from the President model this year, so that both models are now without this point. Universal joints now require a chassis lubricant every 10,000 miles, instead of each 20,000 miles as previously.

On the Dictator the cooling system capacity has been reduced to 14 quarts, the crankcase increased to 6 quarts, and the gasoline tank increased to 18 gallons. On the President the capacity of the cooling system has been reduced to 17 quarts, and the gasoline tank increased to 18 gallons.

Studebaker has introduced a new device this year known as the hill-holder, which removes the difficulty of starting a car from rest on an upgrade. It is inoperative when the car is on a level or pointed down hill. The device is operated by the clutch. When the clutch is disengaged and the foot brakes are applied they remain on after the driver removes his foot from the brake pedal. The brakes then remain on as long as the clutch is disengaged, thus leaving the right foot free to operate the accelerator.

Terraplane

The lubrication requirements, changes, and improvements are identical to those described for the Hudson in this article, except that the Terraplane capacities are as follows: cooling system, 3¼ gallons; crankcase, 6 quarts.

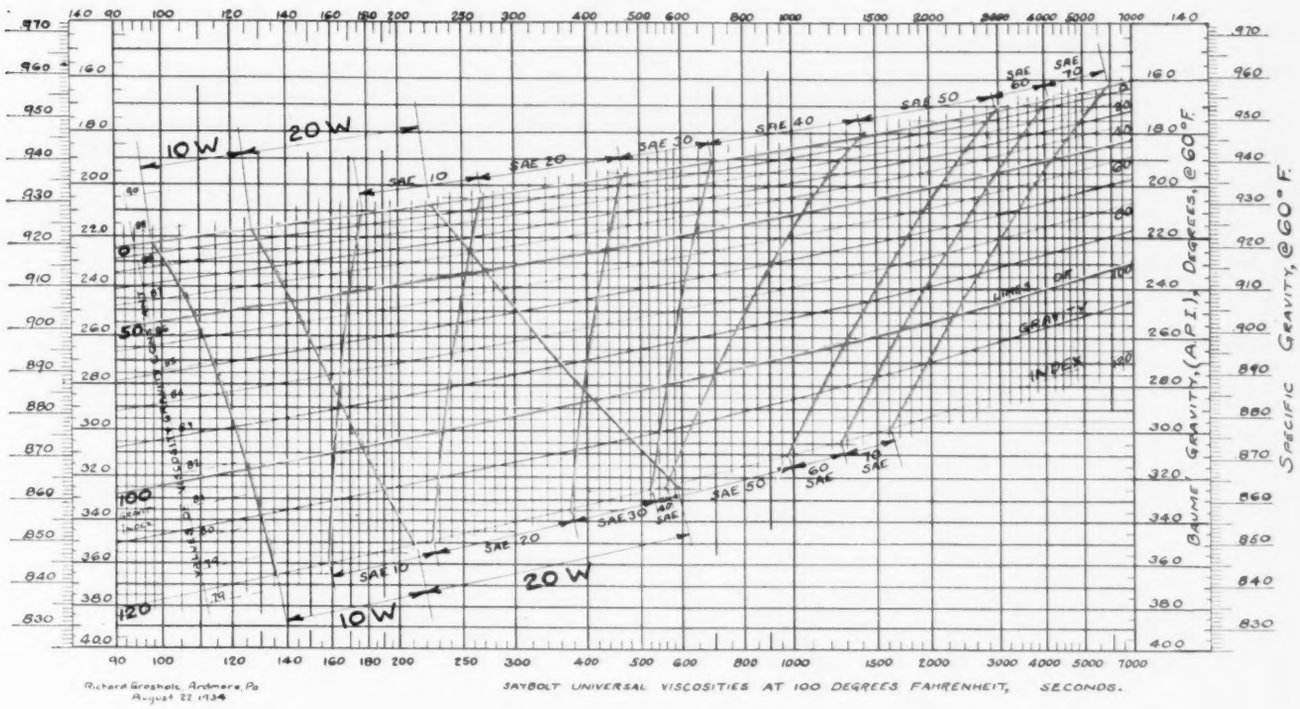
Willys

Lubrication specifications and recommendations remain the same as last year with one minor exception. A grease cup has replaced the oil cup formerly on the distributor shaft.

Make Burner Show Plans

NEW YORK, Nov. 23.—The twelfth national oil burner show will be held at Convention Hall, Detroit, Michigan from April 14 to 18, according to G. Harvey Porter, managing director of the Oil Burner Institute.

Fig. 1—Chart for determination of S. A. E. classifications of crankcase oils, from A. P. I. gravities at 60 F., and Saybolt viscosities at 100 F.



Viscosity-Gravity-Grade Diagrams Are Useful to Oil Marketers

By Richard Grosholz*

"GRAVITY, — Flash, — Fire, — Pour, — Color, — Vis. at 100° F." and sometimes the Conradson Carbon have frequently comprised the extent of inspections announced on lubricants. Fig. 1 is intended to distinguish S. A. E. Viscosity Numbers by the above quantities as accurately as is possible, where additional viscosities at 210 deg., or viscosities at 130 deg. are lacking.

To use this diagram, the intersection of the lines representing the Saybolt Universal viscosity of an oil at 100° F. is obtained with the line representing the A. P. I. gravity of the oil at 60° F. The intersection should fall within the area representing the S. A. E. number of the oil. Instead of A. P. I. gravities, specific gravities may be applied with the use of a straight edge. It is to be observed that the areas representing the new tentative winter grades largely overlap the areas representing the regular grades. The accuracy of the chart is discussed later herein.

This chart is derived by means of the work on "Gravity Indices" by M. R. Fenske and W. B. McCluer of Pennsylvania State College.(1). In this reference, the method of classifying lubricating oils by use of "Viscosity Gravity Constants" of Hill and Coates, (2), is correlated with the "Viscosity Indices" of Davis, Lapeyrouse and Dean.(3, 4).

Both systems are measures of the relation of any oil to oils of naphthenic origin, and to oils of parafinnic origin. "Viscosity Gravity Constants" as the words imply, classify by means of the frequently encountered specifications named. The "Dean and Davis" system, recognizing that resistance to change of viscosity with change of temperature is a highly desireable characteristic of a lubricant, requires a viscosity in addition at 210 deg., which has from time to time been omitted.

By complete tests on diversified oils, involving the use of precise Ostwald viscosimeters,

*Lavallette, N. J.

For the lubricating oil marketer, the buyer, and even the refiner making lubricating oils, the accompanying charts will prove of considerable utility in studying unknown oils, in finding out salient facts regarding the types of oils handled, and in otherwise determining the constants which may be used to identify oils, their source or grade.

Charts are given showing the S.A.E. grades of oils as determined by viscosities, and by viscosities at 100 F., and gravities at 60 F. From these charts the essential facts regarding any oil may be found at a glance, especially when incomplete inspection data are available.

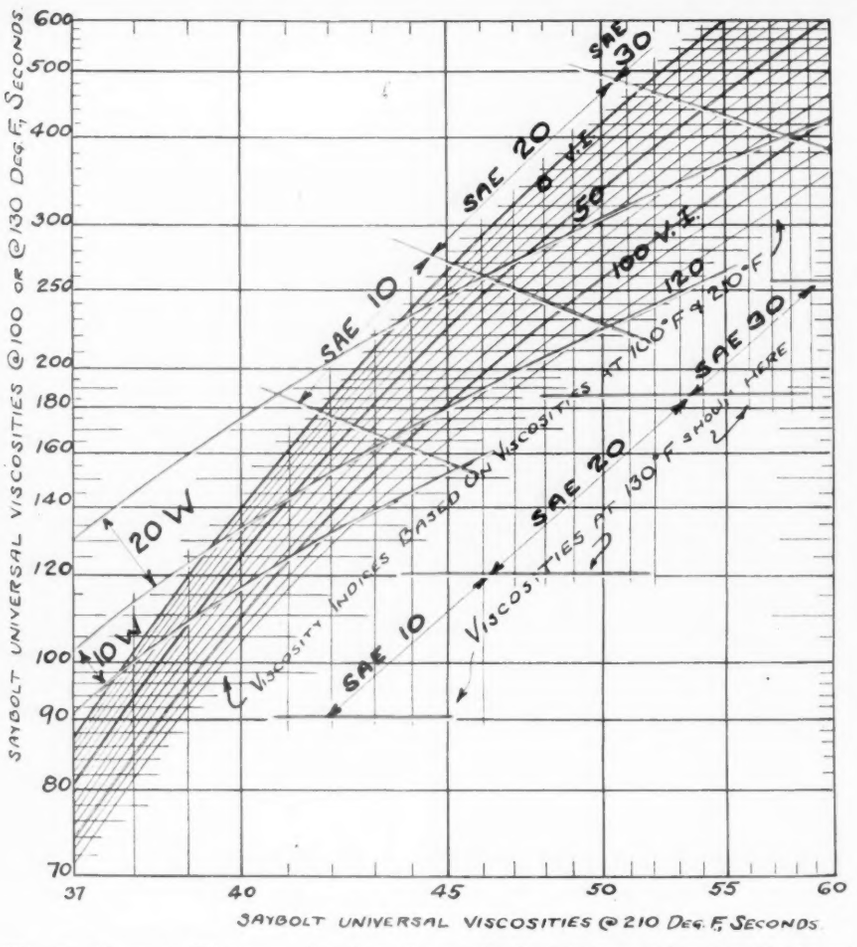

SAYBOLT UNIVERSAL VISCOSITIES @ 100 OR @ 130 DEG F, SECONDS
SAYBOLT UNIVERSAL VISCOSITIES @ 210 DEG F, SECONDS
SAE 10
SAE 20
SAE 30
SAE 50
20 W
10 W
100 V.I.
120
VISCOSITY INDICES BASED ON VISCOSITIES AT 100° F & 210° F
VISCOSITIES AT 130° F SHOWN HERE

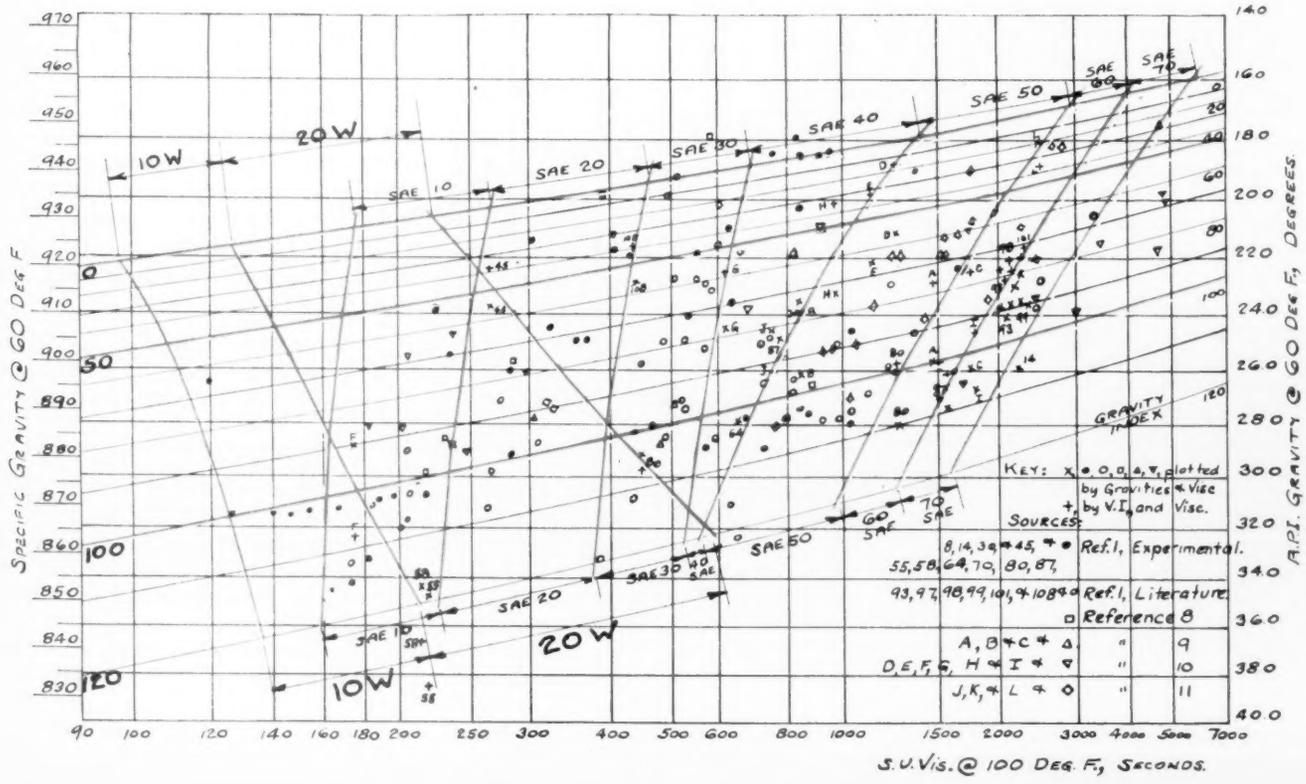
Fig. 2 (above)—Diagram showing the method of determining the limits of S., A. E. classifications, given in Fig. 1. (See text)

Fig. 3 (below)—Diagram showing the accuracy of use of Fig. 1 to determine the grade or classification of oils. Out of inspections of 186 oils, in 28 cases the diagram failed to show the correct grade; in 158 cases, or 85 per cent, the grade determined by Fig. 1 was correct

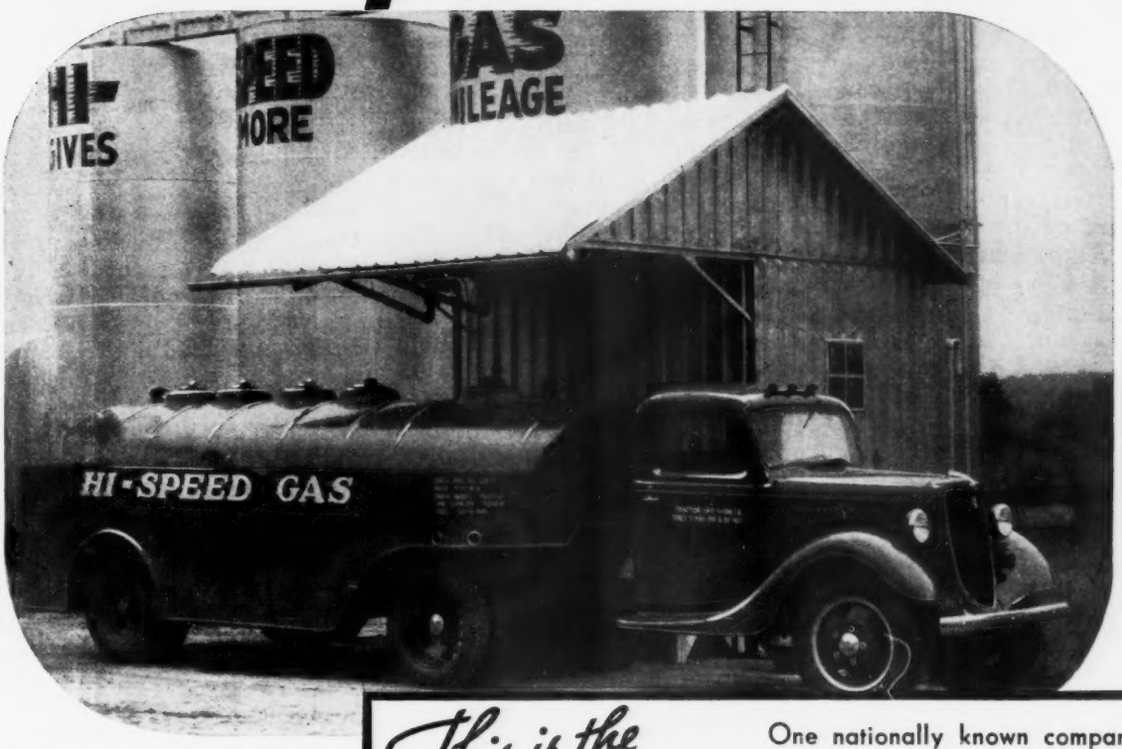
McCluer and Fenske developed an average relation between these two systems of classification. The authors were able to conclude from their work that the relation developed was applicable to oils of all usual viscosities, and coming from any crude through any of the various processes. This relation thus permits the approximation of a number similar to the "Dean and Davis" Index from data consisting only of the Gravity at 60 and the viscosity at 100° F. The Index numbers thus found were named "Gravity Indices" and a chart was given for their finding. (1).

In Fig. 1, areas representing the S. A. E. grades are marked off by means of Gravity Index lines on a diagram similar to that referred to. Fig. 1 differs from the reference in that the axes are rotated, and the chart extended by formula, also given in the reference. In Fig. 1, however, the Gravity Index lines and the Viscosity Index lines as indicated are not ordinarily to be used in finding the motor oil grades, but are of value for special reference.

The position of the S. A. E. limits on Fig. 1 have been found by graphical means, involving a procedure which Fig. 2 will illustrate. Fig. 2 is de-


SPECIFIC GRAVITY @ 60 DEG F
A.P.I. GRAVITY @ 60 DEG F, DEGREES
S.U. VIS. @ 100 DEG. F, SECONDS.
10W
20W
SAE 10
SAE 20
SAE 30
SAE 40
SAE 50
SAE 60
SAE 70
50
100
120
GRAVITY INDEX
KEY: x • o □ ◇ ▽ plotted
by Gravities & Vise
+ by V.I. and Vise.
Sources:
8, 14, 39, 45, + • Ref. 1, Experimental.
55, 58, 64, 70, 80, 87,
93, 97, 98, 99, 101, & 108 ◇ Ref. 1, Literature.
□ Reference 8
A, B, C, Δ " 9
D, E, F, G, H, I, ▽ " 10
J, K, & L ◇ " 11

WATCH Your PAYLOADS!



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One nationally known company* has 327 Fruehauf Trailers. From 1930 until now—nearly 6 years of operation—their repair expense has averaged only $5.50 per Trailer per year!

**Name on request.*

"PAYLOADS" will have the spotlight in most plans for this quarter—and for 1936. Executives have learned, during the past few years, that "watch your payloads" is a rule which leads straight to bigger earnings.

Selling "payloads" is our business. For over 20 years we have concentrated on finding methods of hauling bigger loads at lower cost. The experience we have gained—most of which has come from dealing with the Oil Industry—is available to you now without cost or obligation.

IF YOU USE TRAILERS

Call us in. A Fruehauf Transportation Engineer will gladly check over your entire operation. Many changes took place during the "low" period. Necessity forced the development of many new designs and methods. We work on this basis: *modernization, properly done, pays its own way and then pays you.*

IF YOU DO NOT USE TRAILERS

If Trailers are not as yet a part of your delivery system, an awakening is in store for you! Savings ranging from 30% to 50% of present haulage costs are almost certain. And you will be amazed at the advantages you get over and above the dollar-and-cents economies.

PAYLOAD SPECIALISTS

Fruehauf representatives are payload specialists. They are free to consider your load-carrying problem without restrictions. They do not sell power units. They are not hampered in any way. To them, your problem is an *individual* problem—and, accordingly, they work to an individual solution.

TIME TO TUNE UP

A busy Fall—a still busier 1936—are ahead. It's time to watch your payloads closely. Call in the Fruehauf man. He'll tell you if and how your present set-up can be made more efficient. He'll help you fit Trailers into your 1936 plans—work with you in cutting your capital expenditures and in whittling your operating expense.

A preliminary "get-together" to discuss our service further will be arranged at your convenience. Just tell us to get in touch with you.

Fuel Oil deliveries are made more profitably with Semi-Trailers because of the greater cruising radius afforded. Because so many of the delivery routes in this field are through city traffic, Tractor-Trailer flexibility is also important.

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rived from a diagram giving Dean and Davis Indices graphically. (6.) Viscosities at 100 and at 210° F. for average naphthenic oils intersect on the zero line; for average paraffin oils they intersect on the 100 line. The oils measured by these viscosities are divided into S. A. E. grades, up to S. A. E. 40, by inclined straight lines. These lines are located by extrapolation thru the medium of the A. S. T. M. Viscosity Temperature Chart, D — 341 — 32T.

For example, by definition, 120 secs. Saybolt Universal Viscosity at 130° F. separates S. A. E. 10 from S. A. E. 20 oils. A straight line on the A. S. T. M. chart thru 45 secs. at 210° F. and 120 secs. at 130° F. will cross 100° at 270 secs. Succeeding lines on the A. S. T. M. chart thru 46, 47, etc., secs. at 210° F. and all thru 120 secs. at 130° F. plot the dividing line for the oils represented by the intersections of their viscosities at 100° and at 210° F. In this particular construction the dividing line is apparently straight.

As Gravity Index and Viscosity Index numbers are intended to be equal, the grade boundary lines on Fig. 2 are applied to Fig. 1 by plotting, on the curves of Gravity Index, the viscosity at 100° F. at which the grade boundary lines on Fig. 2 cross each Viscosity Index curve. The grade bounding lines for the tentative winter oils 10W and 20W are transferred to Fig. 1 in the same way; the development of these bounding lines has been discussed.(5).

THIS re-computation has not been done here, but laying down the grade bounding lines by revised Gravity Index lines would only shift these boundaries by the thickness of their lines at the lower ends. But the 10W boundary lines, specifically, are noticeably affected in Fig. 1 on account of crossing Viscosity Index lines at the point of maximum revision of Viscosity Index lines in Fig. 2, and these boundary lines as given reflect the latest data.

Fig. 3, a copy of the essential parts of Fig. 1, shows the results of testing this diagram with the record of 186 complete inspections. The method of Fig. 1 of approximating S. A. E. numbers partakes of the dependability of the relationship between the Viscosity Gravity Constants and Viscosity Indices. This dependability has been thoroughly covered by the originators of the correlation. (1.) The originators accurately measured the gravities and the two viscosities of 54 oils. This diagram is tested out with the inspections of these oils in Fig. 3, naming the grades of 50 correctly. Reference 1 also compares the Viscosity and Gravity Indices by 58 additional inspections from the literature. It is not probable that these inspections were made with the same refinement as those of the authors. The diagram fails in 12 instances.

FIG. 3 also tests results with 74 further inspections from four references, and again fails in 12 instances, 28 failures in all. All apparent positions of the 186 oils are shown in Fig. 3, the points being located by intersections of the gravity and the viscosity readings. In the case of successful interpretations, a key symbol marks the intersection. Incorrect conclusions occur where intersections are marked by an x, numbered or lettered. Where numbers are given they correspond with the numbers of the inspections in reference 1. In the case of the incorrect determinations only, the intersection necessary for the proper conclusion is marked with a cross. This proper position is determined by the intersection of the Viscosity Index, plotted as the Gravity Index, with the same viscosity at 100° F.

In the case of 89 inspections, the differentiations are between S. A. E. 30 and S. A. E. 40, or between lighter groups. Here seven errors are found. In the 97 differentiations between heavier grades, there are 21 errors. The physical quantities involved, represented by the shape of the boundaries, etc., permit a wider variation between Gravity and Viscosity Index, in the lower groups, than in the higher groups, without leading to erroneous conclusions. Oils of widely varying gravities but of identical viscosity at 100° F. in many cases may meet the conditions of some of the lighter grades.

It is also shown by the originators of Gravity Index, that in the case of light oils, the combination of gravity and 100° F. viscosity determinations may give a truer measure of an oil than the combinations of viscosities at 100 and at 210° F., on account of the difficulty of making proper viscosity determinations of light oils at 210° F. Of course, for establishing an oil's grade, the viscosities are required. While this chart cannot differentiate as well between oils of the heavier grades, it is much more rarely that the viscosity of 210° F. of a heavy oil is not supplied, and as intimated before, the viscosity of the heavier oils at 210° F. is taken more accurately on the Saybolt instrument.

The greatest lack of dependability with Fig. 1 seems to occur when considering both heavy and light oils prepared by solvent extraction. If it were not for oils of this type, it would be reasonable to state that if a viscosity gravity intersection fell so that the oil, while maintaining the same viscosity, could vary in specific gravity by ± 0.0100, without crossing any boundary line, the oil would beyond doubt belong to the class indicated. In the inspections used, the variations between Gravity Index and Viscosity Index for extracted oils seems to make twice as great a margin of safety necessary to insure a positive determination.

It is believed, however, that Fig. 1 may be of use to buyers and users in appraising oils. Certain parts of the work of the diagram are covered in the chart of Larson and Schwaderer, (12), but the greater utility of this diagram for the lighter grades of oil and the inclusion of the areas designating the new winter numbers are held to justify the preparation of the work.

In the following paragraphs certain illustrations are given to facilitate the application of the Fig. 1 diagram to problems

All your
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NO matter what your lubrication or oil service requirements are, there is a Balcrank Lubrication Unit or a Brookins Service Station Necessity that meets all your specifications. Both are manufactured by the Cincinnati Ball Crank Co.—famous for quality products plus coast to coast service. Order your service station equipment from this single, dependable source. Address Inquiries Dept. A.
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which may confront the users of lubricants. A particular note is in order for those whose ordinary work does not call for the use of diagrams. In the finding of viscosity readings by means of the top and bottom scales, it may be observed that there is nearly three quarters of an inch between the vertical lines marked 100 and 120, which indicate exactly the viscosities at 100 and 120 seconds at 100 deg. F. At the opposite end of the diagram, the same distance of three quarters of an inch accommodates all viscosities between 2000″ and 3000″ at 100 deg. F.

Thus in estimating the positions of viscosities, one must note the number of divisions between the numbered vertical lines, as four spaces between 100 and 120 secs. Here each space represents 5 seconds. Thus, to find 116 secs., note that 115 is represented by the third vertical line between 100 and 120, and assume a point one fifth of the distance from 115 towards 120. In using the scales at the sides to find the A. P. I. gravities, notice that it was possible to mark the spaces more evenly; as there is a heavy line for each degree and a light line for each one half degree.

Example 1. A dealer has a stock of SAE 10 oil on hand. It is 22.0 A. P. I. gravity and 200 sec. vis. at 100 deg. F. What is its winter grade? From the gravity scale on the right hand side, we run across the diagram on the line marked 22.0, till we intersect the vertical line marked 200. This intersection is well between the two heavy lines slightly inclined upwards to the right and marked SAE 10 at the top, and at the bottom. Thus the oil was supplied correctly as 10W. This same intersection also falls between two heavy lines, further apart and inclined more sharply upwards to the left, and marked 20W. This indicates that the oil must be sold as 20W.

Example 2. NATIONAL PETROLEUM NEWS always gives market quotations on series of oils of 100, 200, 300, 500, 750, 1200, and 2000 secs. vis. at 100 deg. F. In what classes might each of these oils conceivably fall, depending on their gravities, in accordance with this diagram?

a. 100 vis. at 100 F. This viscosity line crosses the left hand 10W line at a point between the horizontal lines marked 22.0 and 24.0 the exact gravity at the intersection to be read as 22.7 deg. Thus an oil of 100 sec. vis. at 100 may have a motor oil rating of 10W if its gravity is under 22.7 deg.

b. 200 vis. at 100 F. This vertical line lies within the SAE 10 zone for its entire length; thus all oils of 200 vis. are SAE 10. But they almost all also fall into the 20W class, except the lightest, those below a gravity to be read at 33.8 deg. at 60 deg. F., and which are in the 10W class.

c. 300 vis. at 100 F. Oils of this exact viscosity all fall within the SAE 20 band. Those oils of this viscosity which are over 24.8 in gravity may be found to be eligible for sale as of 20W grade.

d. 500 vis. at 100 F. All oils of this viscosity are SAE 30 oils. Those of very light gravity, reading over 30.7 deg., may be found to be eligible for the 20W class.

e. 750 vis. at 100 F. Heavier oils in gravity are of SAE 40 grade, and those of lighter gravity may be SAE 50. The gravity reading at the division is read as 26.3 deg.

f. 1200 vis. at 100 F. Those below 19.5 deg. A. P. I. are SAE 40. The intersection with the SAE 50 boundary may be read as 27.2 deg. Those oils with higher gravity readings in degrees are classed here as SAE 60.

g. 2000 vis. at 100 F. This chart shows that these oils may be SAE 50, 60, or 70, or over 70 SAE. The respective divisions by gravity readings are interpreted as 20.7, 23.7, and 26.8 deg. A. P. I. at 60 deg. F.

Example 3. For further practice, the following intersections may be noted, and also precisely located by means of the lines of Gravity Index.

	Vis. at 100 F.	A.P.I. Gr.	SAE Grade	Gravity Index
a.	320	27.5	20*	90
b.	850	29.0	50	110
c.	1350	20.0	50	40
d.	1170	23.7	50	80

* Also 20W.

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Nominate Old Timers

TULSA, Nov. 23.—Nominations for the old timer's medal to be presented at the International Petroleum Exposition here May 16 to 23, are now being received by the Old Timers Committee.

The Grand Old Man of the Oil Industry will be selected from among the pioneers still living. The medal has been awarded at the last five expositions, to the following: J. Alex Stephenson, Tulsa, 1927; James Amm, New York, 1928; John C. Looker, Bradford, Pa., 1929; E. H. Sloan, Pittsburgh, 1930; and N. V. V. Franchot, Olean, N. Y., 1934.

New Body Designs Make Service Men Cuss And Complicate Engine Lubrication

By A. Ludlow Clayden

BY THE old adage beauty is but skin deep. Every year we read the automobile advertising and learn—somewhat to our surprise—that every maker has the most beautiful car on earth. But then perhaps we are not highly educated in appreciating beauty as it might appeal to a member of the beetle family. However what I started to say was that the makers have obviously taken to heart the old saw and argue that beauty being a matter of skin, then the more skin the more beauty. Mechanical and service men are apt to miss the beauty when they try to reach some vital organ.

Not only are the changes in fenders and the gradual disappearance of the engine hood which is now often more a lid than a hood, making for inaccessibility, but the lowering of frames and floorboards, the general use of propeller shaft tunnels coupled with elaboration of spring design has made detail lubrication far more difficult.

There is good reason to hope that we are now at about the worst stage and things will start to get better. The reason is that the most basic thing about a car is the size and spacing of the seats in the body. For many years this changed but little, bodies may have looked different but were not really very different in dimensions. Now in the last three years great changes have taken place and the chassis is not yet quite adapted to new body proportions.

This without doubt has been one of the reasons for the general adoption of hydraulic brakes. They do away with cross members and linkages for which it is very hard to find space beneath a modern body and to this extent the lubricating man is a little better off with 1936 cars as compared with 1935 models.

Then too faster driving and higher mileages has made greasing more important as was well pointed out by Dr. Ralph R. Matthews in his recent A.P.I. paper (see N.P.N. Nov. 13, 1935, page 43). Grease recommendations are still in confusion but the situation is not quite so bad as it used to be.

OF COURSE the S.A.E. has made a start at grease classification by discussions in committee and while the adoption of such classification may be some distance ahead quite a few of the manufacturers are now making recommendations pretty well in line with the tentative scheme. So while the actual greasing operation may still be somewhat of a puzzle to an agile monkey when clutch release and some front end fittings have to be reached, the actual selection of greases is a little easier.

Automobile engineers want greases used made from fairly heavy oils; S.A.E. 30 and 40 rather than from 100 vis and they are right because such greases last longer and do a better job all around. Experimenting is still going on with wheel bearing greases because heat from brakes is making this part of the job more important so the selection of really high quality products is especially desirable and service men should be taught the right amount to use and how to use it.

Perhaps the worst thing from the lubrication viewpoint is found in the transmission and rear end situation. Most of the 1936 cars call for E.P. and there are of course quite a few reliable E.P. lubricants. The catch is that they will not all mix with each other and only a few can be safely mixed with good conventional gear lubricants that are not E.P. Let me make this quite clear. Two gear oils or greases may be both excellent products taken separately; just as crabmeat and ice cream are excellent foods as long as they are not allowed to blend in the human interior. Mixed the two lubricants may react chemically upon each other with disastrous results. Unsuitable mixtures may cause deposits hard enough to destroy ball bearings, or the effect of mixing may be to create excessive foaming.

It is not too easy a situation for the service man because the only thing he can do safely is to drain and refill transmissions and rear ends unless he is sure that the car was last serviced with the same product that he handles. Of course this does provide a good sales opportunity to the man willing to take time to explain to his customer, and it is an excellent argument in favor of always returning to the same station for greasing service. Technically, however, the answer is not in sight.

Gear lubricants that cannot safely be mixed have been on the market for many years but their sales were comparatively so small that troubles have been very rare. I do not anticipate a terrible amount of trouble in the immediate future but there is now and will continue to be quite enough so that it is well worth while to do all possible to avoid it. Another word of warning is that calling an oil an E.P. does not make it one and also there is no known way

as yet of making an E.P. lubricant as cheap as a straight black oil.

One essential characteristic of an E.P. lubricant is that it must be made from quite good oil to start with; otherwise it will break down in a short time and be very liable to thicken. Then the E.P. base is an item of cost and the blending of the oil and the base has to be done with careful control, introducing a labor cost. The maxim that you never really get more than you pay for is particularly true of E.P. lubricants.

As was brought out in the report of the A.P.I. Automotive Survey Committee (N.P.N. Nov. 13, 1935, page 31) the lubrication problem that is troubling the oil industry most at the moment has been created by the use of cadmium-silver alloy bearings, and in a few cases by copper-lead alloy in engines with such poor provision for oil cooling that oil temperatures can rise well into the three hundreds. Motor oils which are of high quality and which would give particularly good service at high temperatures may be particularly bad oils to use with these new bearings; which means that if two cars of the same make and model were different only in having different bearing alloys their motor oil requirements might be as wide as the poles apart.

There are nearly 25,000,000 cars in use and it would be utterly absurd to try to change all motor fuel for the sake of 100,000 or so mostly of one make and two models. The answer must be found by engineering changes. Any engine in which oil temperature can go over 300 degrees with any kind of driving is poorly designed. Even if an oil will stand such a temperature its useful life is less than half what it would be at 250 degrees which means that engines running such oil temperatures cannot be really durable.

SO WHEN cases of bearing trouble occur and they are occurring with considerable frequency in some parts of the country; and when the bearing involved is one of the new alloys, remember the blame rests on the bearing and not on the lubricant. I doubt if the present bad condition lasts much longer. The greatest sufferers are the dealers for the sensitive cars and they are putting up a considerable howl which cannot fail to take effect.

Gasoline requirements for 1936 cars are about the same as for the last models. In some cases compression ratios are higher but if this is coupled with improved head design and better valve and spark plug cooling it does not increase the octane requirement. However most of the cars built during the last year are quite carbon sensitive and knock very easily if the spark timing is a trifle early. This is a strong argument for good quality motor oils since the slower the carbon deposition the longer will the car performance be satisfactory on regular 70 octane motor fuel. To use the engineering term the factor of safety with respect to knock is smaller than it was.

Now one very important thing must be remembered about this. These cars are designed to use 70 octane gasoline, that is the intention of their manufacturers, so it is to be assumed they are satisfied with the factor of safety they have used. Presumably if regular gasolines went up to 72 octane next years cars would go up in compression by two octane numbers in requirement. Every octane raise costs the refiner more than the one before so the wise thing for the oil industry to do and the thing it probably will do is to stand pat. If the engineers find they have just a trifle overdone compression for 70 octane there is nothing to hinder them from backing off a trifle.

What refiners would like to see happen would be changes in design to take heat out of the fuel system coupled with the use of larger intake manifolds. If this were done gasoline would become more volatile, octane requirements for the same compressions would drop and power would be a little increased. Mileage would also tend to improve. Cramped in a tight fitting compartment and set behind a narrow radiator the modern engine tends to run quite hot and the air around it runs much hotter than in older cars. So there is a real engineering problem in getting temperatures down. However there is so much to be gained for all concerned, especially for the car owner, that reducing under-hood temperatures cannot be long delayed.

E. P. Lube Warning

Serious thought may well be given to this warning on the use of extreme pressure lubricants which Pontiac gives to its service men. Pontiac does not specify the use of E. P. lubricants, but issues these general instructions, knowing that this type of lubricant is used by some oil companies in servicing the transmission and rear axle of all cars.

"It is not necessary to use Extreme Pressure Lubricants (E. P. Lubricants) in the differential and transmission on Pontiac cars. However, a number of oil companies are now using this type of lubricant for servicing these units on all cars. While E. P. Lubricants offer many advantages, due to the peculiar behavior of these lubricants in service, changes in physical characteristics may occur. These changes are indicated by an increased viscosity or tendency to stringiness or fibrous appearance. Under severe conditions such changes may occur long before that which we are accustomed to expect from our experience with conventional gear oils and are the danger signals that the lubricant is losing its effectiveness and should be changed.

"When using Extreme Pressure Lubricants the following points should be observed:

"1. During each 1,000 mile lubrication the rear axle and transmission lubricant must be inspected for stringiness.

"2. Avoid mixing the various makes of Extreme Pressure Lubricants or adding one to any other type of gear oil. Experience has indicated that the special ingredients often react chemically or combine with each other to cause foaming, thickening, sludge or other undesirable results.

"3. Always flush the gear box when hanging gear oil, especially when changing brands, to be assured of satisfactory results."

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THERE are no experiments in the 1936 Ford V-8 Trucks and Commercial Cars. Every feature has been PROVED and APPROVED by millions of miles of service under every conceivable condition of load and road and weather. Its 80-horsepower V-8 engine has proved its economy and reliability on the world's greatest proving ground . . . the job itself. Its full-floating rear axle with straddle-mounted pinion . . . full torque-tube drive . . . positive, quick-action safety brakes . . . and many other quality features have proved the soundness of Ford design by their performance in actual service.

This impressive record offers convincing proof of V-8 Reliability. The cost records of owners firmly establish V-8 Economy. And V-8 Performance needs no confirmation, for it is evident everywhere you look. Thus, Ford V-8 Trucks and Commercial Cars have been PROVED BY THE PAST. Now they have been IMPROVED FOR THE FUTURE. Your Ford dealer invites you to make your own "on-the-job" test without cost or obligation. He will be glad to tell you the details of the money-saving Ford engine-exchange plan. Call him today and set a date.

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FORD V-8

TRUCKS AND COMMERCIAL CARS

1936 PASSENGER CAR CAPACITY CHART

With Lubricant Recommendations

Make and Model	Crankcase					Transmission If marked (fw), includes Free Wheeling			Differential			Cooling System Qt.	Gas Tank Gal.
	Capacity Qt.	Summer: Above 50°	Summer: 50° to 32°	Winter: 32° to Zero	Winter: Zero to —15°	Cap. Pt. or Lb.	Summer: Consistently Above 32°	Winter: Consistently Below 32°	Cap. Pt. or Lb.	Summer: Consistently Above 32°	Winter: Consistently Below 32°		
AUBURN													
Standard 6—1936	6	50	40	30	20W	2½	160	90	4	160 EP	90 EP	16	20
Custom 6—1936 (Dual Ratio)	6	50	40	30	20W	2½	160	90	6	160 EP	90 EP	16	20
Standard 8—1936	8	50	40	30	20W	3	160	90	4	160 EP	90 EP	20	20
Custom 8—1936 (Dual Ratio)	8	50	40	30	20W	3	160	90	6	160 EP	90 EP	20	20
Supercharged 8 — 1936 (Dual Ratio)	8	50	40	30	20W	3	160	90	6	160 EP	90 EP	20	20
AUSTIN													
4—1936	4	30	30	20W	10W	2/3	160	90	2/3	160	90	6	5
BUICK													
8 (40)—1936	6	30	20	10W	10W	1¾	160	90	3	160	90	13¼	16
8 (60)—1936	8	30	20	10W	10W	2½	160	90	4	160	90	17	16
8 (80)—1936	8	30	20	10W	10W	2½	160	90	4	160	90	17	20
8 (90)—1936	8	30	20	10W	10W	2½	160	90	4½	160	90	17	20
CADILLAC													
V-8 (60)—1936	6¾	30	20W	10W	10W	2½	160 FP	90 FP	5	160 EP	90 EP	30	21
V-8 (70, 75)—1936	6¾	30	20W	10W	10W	4½	160 FP	90 FP	5	160 EP	90 EP	29	25
V-12 (80, 85)—1936	9	30	20W	10W	10W	4½	160 EP	90 FP	5	160 EP	90 EP	19	25
V-16—1936	10	30	20W	10W	10W	4½	160	90	6	160 EP	90 EP	22	30
CHEVROLET													
Master (FA, IT)—1936	5	30	20	10W	10W	2½	160	90	4½	160	90	15	14
Standard (EC)—1936	5	30	20	10W	10W	1½	160	90	3	160	90	15	14
1½ Ton Truck—1936	5	30	20	10W	10W	6½	160	90	7	160	90	10½	18
CHRYSLER													
6 (C7)—1936 (Conv.)	6	30	20W	10W	10W	2½	160	90	3¼	90 EP	90 EP	19	15
6 (C7)—1936 (With T.O.)	6	30	20W	10W	10W	4½ fw	70	50	3¼	90 EP	90 EP	19	15
De Luxe 8 (C8)—1936 (Conv.)	6	30	20W	10W	10W	2½	160	90	3¼	90 EP	90 EP	22	15
De Luxe 8 (C8)—1936													

Make and Model	Crankcase					Transmission If marked (fw), includes Free Wheeling			Differential			Cooling System Qt.	Gas Tank Gal.
	Capacity Qt.	Summer: Above 50°	Summer: 50° to 32°	Winter: 32° to Zero	Winter: Zero to —15°	Cap. Pt. or Lb.	Summer: Consistently Above 32°	Winter: Consistently Below 32°	Cap. Pt. or Lb.	Summer: Consistently Above 32°	Winter: Consistently Below 32°		
8 (621N)—1936 (Conv.)	8	40	30	20	20	2	70	50	3	110 EP	90 EP	21½	16
8 (621N)—1936 (With T.O.)	8	40	30	20	20	6 fw	70	50	3	110 EP	90 EP	21½	16
8 (627)—1936	8	40	30	20	20	2½	70	50	3½	110 EP	90 EP	24	19
LA FAYETTE													
6 (Series 3610)—1936	7	40	30	20W	10W	3	90 EP	90 EP	3	90 EP	90 EP	19	15
6 (Series 3610A) — 1936 (Conv.)	6	40	30	20W	10W	3	90 EP	90 EP	3	90 EP	90 EP	19	15
6 (Series 3610A) — 1936 (With T.O.)	6	40	30	20W	10W	4½ fw	70	50	3	90 EP	90 EP	19	15
LA SALLE													
36-50—1936	7	30	20W	10W	10W	2½	160	90	5	160	90	16	18
LINCOLN													
Zephyr—1936	6	50	40	20W	10W	2½	160	90	2½	160 EP	90 EP	27	19
V-12—1936	12	40	40	20W	20W	6	160	90	6	160 EP	110 EP	32	26
NASH													
400 (Series 3640)—1936 (Conv.)	7	40	30	20W	10W	4	90 EP	90 EP	3	90 EP	90 EP	18	15
400 (Series 3640)—1936 (With T.O.)	7	40	30	20W	10W	5½ fw	70	50	3	90 EP	90 EP	18	15
400 (Series 3640A)—1936 (Conv.)	6	40	30	20W	10W	3	90 EP	90 EP	3	90 EP	90 EP	18	15
400 (Series 3640A)—1936 (With T.O.)	6	40	30	20W	10W	5½ fw	70	50	3	90 EP	90 EP	18	15
Amb. 6 (3620)—1936 (Conv.)	7	40	30	20W	10W	3	90 EP	90 EP	6	90 EP	90 EP	17½	19
Amb. 6 (3620)—1936 (With T.O.)	7	40	30	20W	10W	5½ fw	70	50	6	90 EP	90 EP	17½	19
Amb. 8 (3680)—1936 (Conv.)	7	40	30	20W	10W	3	90 EP	90 EP	6	90 EP	90 EP	21	19
Amb. 8 (3680)—1936 (With T.O.)	7	40	30	20W	10W	5½ fw	70	50	6	90 EP	90 EP	21	19
OLDSMOBILE													
6 (F-36)—1936	6	30	20	20W	10W	2	160	90	2½	160 EP	90 EP	13	18
8 (L-36)—1936	7	30	20	20W	10W	2	160	90	2½	160 EP	90 EP	16	18

De Luxe 8 (C8)—1936															
8 (L-36)—1936	7	30	20	20W	10W	2	160	90	2½	160 EP	90 EP	16	18		
(With T.O.)	6	30	20W	10W	10W	4½ fw	70	50	3¼	90 EP	90 EP	22	15		
Airflow 8 (C9)—1936 (Conv.)	6	30	20W	10W	10W	3¾	160	90	4¼	160	90	19	21		
Airflow 8 (C9)—1936 (With T.O.)	6	30	20W	10W	10W	6¼ fw	70	50	4¼	160	90	19	21		
Airflow Imp. 8 (C-10)—1936 (T.O. Std.)	6	30	20W	10W	10W	6¼ fw	70	50	4¼	160	90	19	21		
DE SOTO															
Airstream 6 (S1)—1936 (Conv.)	6	30	20W	10W	10W	2½	160	90	3¼	90 EP	90 EP	19	15		
Airstream 6 (S1)—1936 (With T.O.)	6	30	20W	10W	10W	4½ fw	70	50	3¼	90 EP	90 EP	19	15		
Airflow 6 (S2) — 1936 (Conv.)	6	30	20W	10W	10W	5½	160	90	3¼	90 EP	90 EP	17	16		
Airflow 6 (S2) — 1936 (With T.O.)	6	30	20W	10W	10W	4½ fw	70	50	3¼	90 EP	90 EP	17	16		
DODGE															
6 (D2, D3)—1936	5	30	20W	10W	10W	2½	160	90	3¼	160	90	15	15		
FORD															
V-8—1936	5	50	40	20W	10W	2½	160	90	2½	160 EP	90 EP	22	14		
V-8 Truck—1936	5	50	40	20W	10W	5	160	90	7	160 EP	90 EP	25	18		
GRAHAM															
Crusader (80)—1936	5	40	30	20W	10W	1½	160 EP	90 EP	2	160 EP	90 EP	15	12		
Cavalier (90) — 1936 (Conv.)	5	40	30	20W	10W	2½	160	90	2½	160 EP	90 EP	15½	15		
Cavalier (90) — 1936 (With T.O.)	5	40	30	20W	10W	3½ fw	70	50	2½	160 EP	90 EP	15½	15		
Supercharger (100, 110)—1936 (Conv.)	5	40	30	20W	10W	2½	160	90	2½	160 EP	90 EP	15½	15		
Supercharger (100, 110)—1936 (With T.O.)	5	40	30	20W	10W	3½ fw	70	50	2½	160 EP	90 EP	15½	15		
HUDSON															
6—1936	5	30	30	20W	10W	3	90 EP	80 EP	3	110 EP	90 EP	13	16½		
8—1936	7	30	30	20W	10W	3	90 EP	80 EP	3	110 EP	90 EP	20	16½		
HUPMOBILE															
6 (618G)—1936 (Conv.)	6	40	30	20	20	2¼	70	50	2½	110 EP	90 EP	18	16		
6 (618G)—1936 (With T.O.)	6	40	30	20	20	6 fw	70	50	2½	110 EP	90 EP	18	16		
PACKARD															
8 (120)—1936	7	40	30	20W	10W	2	160	90	4¼	160 EP	90 EP	18	20		
8—1936	8	40	30	20W	10W	4½	160	90	6	160 EP	90 EP	20	25		
Super 8—1936	10	40	30	20W	10W	4½	160	90	6	160 EP	90 EP	22	25		
12—1936	10	40	30	20W	10W	4½	160	90	6	160 EP	90 EP	40	30		
PIERCE-ARROW															
8 (1601)—1936 (T.O. Std.)	9	30	30	20W	10W	7 fw	90	70	6	90 EP	90 EP	25	30		
12 (1602, 1603)—1936 (T.O. Std.)	11	30	30	20W	10W	7 fw	90	70	6	90 EP	90 EP	38	30		
PLYMOUTH															
6 (P1, P2)—1936	5	30	20W	10W	10W	2½	160	90	3¼	160	90	15	15		
PONTIAC															
6 (26B), De Luxe 6 (26A)—1936	6	30	20	10W	10W	1¾	160	90	4½	160	90	15	15		
De Luxe 8 (28)—1936	7	30	20	10W	10W	1¾	160	90	4½	160	90	17	18		
REO															
Flying Cloud (6D)—1936	6	30	20	20W	10W	2	160	90	2	160	90	18	16		
STUDEBAKER															
Dictator 6 (3A, 4A)—1936 (Conv.)	6	40	30	20W	10W	2½	70	50	2½	110	90	14	18		
Dictator 6 (3A, 4A)—1936 (With T.O.)	6	40	30	20W	10W	6 fw	70	50	2½	110	90	14	18		
President 8 (2B, 2C)—1936 (Conv.)	8	40	30	20W	10W	3	70	50	4	110	90	17	18		
President 8 (2B, 2C)—1936 (With T.O.)	8	40	30	20W	10W	7 fw	70	50	4	110	90	17	18		
STUTZ															
SV-16, DV-32—1936	12	50	40	30	20W	6	160	90	4	160 EP	90 EP	28	20		
TERRAPLANE															
6—1936	5	30	30	20W	10W	3	90 EP	90 EP	3	110 EP	90 EP	13	16½		
WILLYS															
77—1936	4	40	30	20W	10W	1	160	90	1	160	90	9	8		

KEY

CRANKCASE, TRANSMISSION & DIFFERENTIAL

Capacities are for refill. Recommendations are:

10W — No. 10W Engine Oil
20W — No. 20W Engine Oil
20 — SAE 20 Engine Oil
30 — SAE 30 Engine Oil
40 — SAE 40 Engine Oil
50 — SAE 50 Engine Oil
60 — SAE 60 Engine Oil
70 — SAE 70 Engine Oil
80 — SAE 80 Gear Lubricant
90 — SAE 90 Gear Lubricant
110 — SAE 110 Gear Lubricant
160 — SAE 160 Gear Lubricant
80 EP — SAE 80 Extreme Pressure Lubricant
90 EP — SAE 90 Extreme Pressure Lubricant
110 EP — SAE 110 Extreme Pressure Lubricant
160 EP — SAE 160 Extreme Pressure Lubricant

B—Both sides of hood
C—Center of hood
F—Front of hood
L—Left side of hood
R—Right side of hood
T.O.—Transmission Overdrive
fw—Free wheel or overdrive capacity included in transmission capacity given

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Why Different Types of Extreme Pressure Lubricants Should Not Be Mixed

By Arch L. Foster
N. P. N. Staff Writer

A CONSIDERABLE degree of trepidation has existed in the minds of lubricating technologists recently regarding the admixture of different types of extreme pressure lubricants within the same gear box. Service departments and filling station attendants, as well as purchasers of E. P. lubricants, have been warned against mixing a quantity of fresh lubricant with the residue of another and unknown lubricant in a differential or transmission box, because of possibilities of trouble and malfunctioning of the lubricant under these conditions.

Nor is this admonitory caution a figment of the salesman's brain, or a trick to sell a greater amount of E. P. lubricant with each grease job. A very definite possibility of trouble exists under these conditions. This possibility is the likelihood of a chemical reaction between different E. P. materials employed by different makers in the manufacture of this type of lubricant.

Since the chemistry of reactions between these various materials, which might take place under some or all of the conditions existing in the gear box under extreme pressure conditions, is in many cases rather obscure, the matter of dodging these troubles is one of prevention or avoidance, rather than one of solving the problem if and when it develops.

The difficulty may arise because of the reactions which may take place between the non-mineral oil compounds used to impart E. P. properties to the lubricant. To illustrate the possibilities, most E. P. lubricants contain one or more of the following elements, in one combination or another: lead, sodium, aluminum, chlorine, sulfur. In addition, other materials which may possibly be used are castor oil, saponifiable oil such as lard oil, and glycerine.

Lead, one of the commonest metals in such lubricants, reacts, or may react under the proper conditions, with either chlorine or sulfur, forming the insoluble sulfide or chloride of lead. If formed, these salts are insoluble in water, and probably so in the oil of the lubricant. Therefore the salt will precipitate or be thrown out as a solid, which certainly is no part of a lubricant, E. P. or otherwise. The salt will be suspended for a time doubtless, in the liquid portion of the lubricant, gradually precipitating out on gears and container walls, such as the gear box or housing.

Two conditions may be the results of this reaction. The first is, a product is formed which is not a lubricant, and which may have no E. P. properties whatever. Second, the removal of the E. P. materials from the lubricant by combination with another material present in the other lubricant lessens the amount of active E. P. material available for the job of lubricating the hypoid or other gear, lessening the efficiency of the remaining lubricant, and inviting disaster as result of insufficient lubrication to carry the load.

As an example, assume an E. P. lubricant containing chlorine but no lead is placed in a gear box in which another lubricant, by another maker and containing lead has been used previously. The local heat generated in the lubricant by the severity of the operating conditions may cause the chlorine to react with the lead soap, freeing the oil which was saponified by the lead, and forming lead chloride. The lead and the chlorine in combination are not suitable as E. P. lubricants; each has been removed from the zone of activity by precipitation. Therefore the remaining lubricants are reduced to too low values as E. P. lubricants by the removal of their active components, and a gear failure is possible.

Such reactions are possible, even with the very best, most efficient lubricants of this type. Either lubricant may well be, and usually is, highly efficient for its purpose, when used alone. In fact, the more efficient the lubricant is in its pure state, the more likely it is

A SOMEWHAT delicate situation now arises as a result of the use of E. P. lubes in a large number of modern cars, a situation which must be handled carefully by the salesman in the lubritorium to avoid ill will on the part of customers.

When make-up lubrbicant is needed in the transmission or differential of a car requiring E. P. lubricant it is necessary to determine whether oil now in the gear cases is the same as that being added. If that cannot be determined the customer should be sold a complete change of lubricant.

The situation is complicated by the fact that some companies now have given E. P. characteristics to all gear lubricants marketed through their stations. Such companies will need to require their salesmen to use care in adding make-up lubricant to the gear boxes of any car where the salesman is not sure what lubricant already is in the gear cases.—Editor.

CHEVROLET furnishes *fast, economical transportation* to America, and the Bell System furnishes *fast, economical communication* to Chevrolet.

Teletypewriter Exchange Service was introduced two years ago to connect one regional sales office and its subsidiary zone offices with the home office at Detroit. It proved so satisfactory that service was soon extended to other offices. Today, 45 cities are included in a closely co-ordinated network which covers the entire United States.

Traffic normally flows from the zone offices to the regional offices, to the Detroit headquarters, or Flint factory, and return, but any individual office can talk in type direct to any other if occasion arises. Originally installed for sales purposes, the service is now used for advertising, accounting, administrative and manufacturing matters as well.

The speed, the two-way contact and the accurate written records which "typing-by-wire" provides, have proved equally invaluable to more than 100 firms in the petroleum industry, including Gulf, Pure Oil, Richfield, Shell, Sinclair, Texas, Tidewater. Probably your own business could employ it profitably. Your local telephone company will gladly discuss it with you.

to react with a different lubricant containing a different E. P. material. The chemist cannot always predict whether the active components of two different lubricants will react seriously, when placed in contact. One lubricant may have its E. P. characteristics completely destroyed by mixing with another of a given sort; the same one may mix perfectly with still another lubricant, without the slightest damage to its lubricating properties. Or, reactions between two lubricants may be slow and incomplete, requiring a considerable time to show any serious lessening of lubricating efficiency.

The form in which the E. P. components of two lubricants are used in the finished lubricant may determine whether or not reactions with another given E. P. material will take place. For instance, chlorine in the form of chlorinated coal tar materials, such as diphenyl, may react with difficulty with another material; chlorine in the form of carbon tetrachloride or sulfuryl chloride may attack a lead base lubricant or a lubricant containing lead soaps, with avidity, destroying the lubricant's efficiency.

Sulfur is reported by Mougey to react with lead in a lubricant in which both are found, to some extent. Obviously the same thing may occur when two lubricants are mixed, one containing one of these components, and the other containing the other. Yet sulfur compounds used properly in a given lubricant, may and do form some of the best E. P. products known.

It is obvious then that the mixing of E. P. lubricants of different compositions may be fraught with serious possibilities. Whether or not these possibilities become facts, whether or not the products react undesirably can be determined only by trial. Trial in a customer's car may result in damage to the gears, expense to the supplier of the lubricant, and a dissatisfied or lost customer.

In the event of trouble arising from mixing E. P. lubricants, it is usually the last lubricant added which carries the blame. If the mixing results in trouble, the fault evidently lies with the lubricant added last, in the customer's way of thinking. The safe method of avoiding such difficulties is to have the service attendant be certain that all old E. P. material is removed from the gear case before the fresh material is added. The attendant has no way of determining whether the two will react or not.

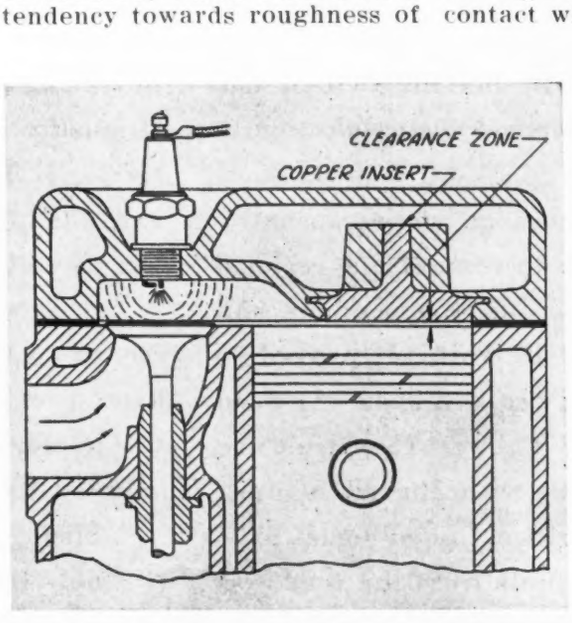
High Compression Combustion Aided By Composite Cylinder Heads

COPPER inserts in the cylinder head at the part facing the end of the piston where there is only a small clearance at the top end of the stroke is the solution to the problem of combustion "ping" or detonation at the higher compression ratios, rather than the use of a head made entirely of a metal with high heat conductivity according to an article by Irving E. Aske in the Nov. 30 issue of *Automotive Industries*. The insert is thus in contact only with that portion of the charge last to burn.

A head made entirely of a metal with high heat conductivity accomplishes the object of cooling that portion of the combustible charge last to burn, but it also cools all the rest of the charge. To compensate for the higher heat losses resulting from the greater conductivity of the entire head, the combustion time must be reduced, which results in a tendency towards roughness of combustion. The iron cylinder head has been found to be ideal from the standpoint of smoothness of combustion, because of its low conductivity, but its tendency to cause detonation has placed a low limit upon the compression ratio permissible with it. The copper insert thus retains the advantages of both types of material, it is said.

Copper has approximately twice the heat conductivity of any other available metal suitable for the purpose. It has a relatively high resistance to corrosion, a relatively low coefficient of heat expansion (more nearly equal to that of iron), and a relatively high melting point. It can be alloyed with cast iron and bonded to it securely, it is affirmed. It is easily machined and cast, and its cost, per unit of volume, is just about the same.

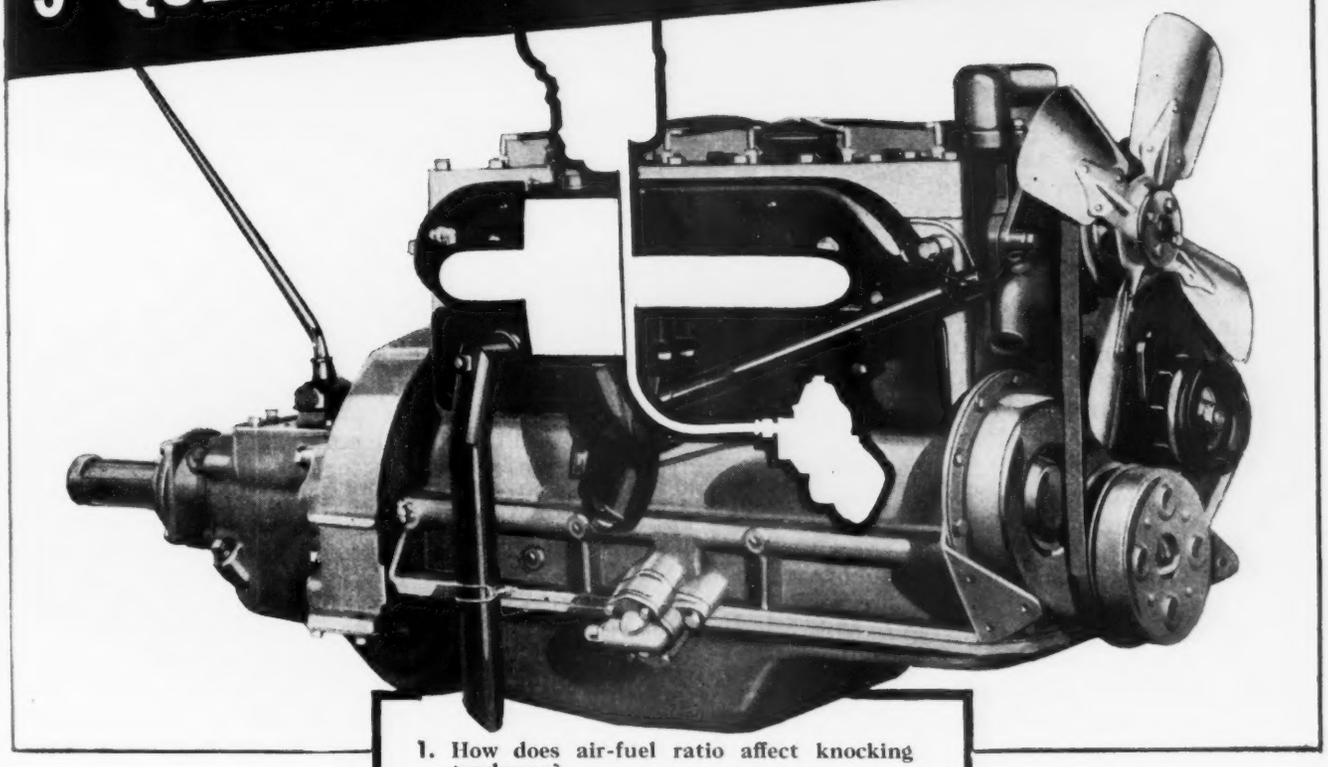
It has been found that the cooling surface of the copper in contact with jacket water must be at least three times that of the surface exposed to the combustible gases. The inserts are therefore made with fins extending into the water chamber around which water circulates freely.



Sectional view of iron cylinder head with copper insert

Engine operating data plotted from the results of tests with different heads on the same engine indicate that greater horsepower is generated with less fuel per horsepower-hour at 1000 to 4000 R.P.M.

9 QUESTIONS ABOUT FUEL INDUCTION



1. **How does air-fuel ratio affect knocking tendency?**
2. **What is the relation of air-fuel ratio to the life of engine parts?**
3. **How does altitude affect carburetion?**
4. **How does weather affect carburetion?**
5. **What is the relation of fuel volatility to carburetion?**
6. **What is the relation of carburetion to distribution?**
7. **What factors affect distribution?**
8. **How can mixture strength be measured accurately?**
9. **How can the efficiency of distribution be determined?**

OUR laboratories have found a study of carburetion and distribution essential to their work on the relation of fuel characteristics to car performance, for the following reasons:

First, if an engine is to develop its full power, the carburetor must maintain mixture strength within narrow limits at wide open throttle.

Second, to insure good fuel economy, the induction system must produce leaner air-fuel ratios at partial throttle than at wide open throttle. Up to 20,000 *separate and uniform* volumes of mixture per minute must be fed to the cylinders, with the air-fuel ratio of each adjusted in accordance with requirements imposed by engine speed and load.

Third, the fuel induction system must be a watch dog to guard the engine from the evils of an oxidizing flame. Lean mixtures seldom caused trouble when engines had low compression ratios and low volumetric efficiency. Today, the large amount of power produced at wide open throttle by each cubic inch of displacement results from high pressures and temperatures which can be used *only* under conditions of safe combustion. The carburetion system must feed a uniform charge to each cylinder and never be guilty of starving one or more cylinders—with the resultant premature destruction of engine parts.

With the future prospect of higher specific output from engines, increased pressures and temperatures—and the possibility of higher gasoline prices—correct carburetion is of prime importance to all manufacturers and users of automotive equipment. Answers to the nine carburetion questions above—and probably to others not yet considered in our research work—demand the attention of engine designers.

Our laboratories are constantly cooperating with the technical departments of oil and automotive companies in research projects. Possibly some of the information so obtained would be helpful to you—or possibly research projects now under way could be enlarged to obtain data you want. We invite your cooperation in any problem concerned with the relation of fuel quality to car performance. Ethyl Gasoline Corporation, Chrysler Building, New York City.

Product Uniformity Serious Problem For Grease Makers And Users*

By C. R. Ahlberg[1]

MANY theories have been used to explain the different stages in the decomposition of greases and unfortunately these theories are by no means in harmony. We are taking the liberty of collecting some of the theories used at the present time in explaining the many facts in the decomposition and deterioration of ball bearing lubricants.

We have collected these theories into several different groups and are listing them as follows: The following quotations are the answers to questionnaires we sent to several leading lubricant engineers and chemists.

1. Explanation of Reaction causing Decomposition of Greases during Storage.

A. "We know of no definite research on the stability of greases which will answer this question. Our own laboratory observations, however, lead us to believe that the problem is largely one of oxidation with the resulting formation of products of a sticky or gumming nature, which cause trouble in packed ball bearings. The reaction is probably in many ways similar to that of the hardening of drying oils commonly used in paints, although oils of the drying type are far too unstable to be used in greases, especially those intended for ball bearings."

B. "Very little is known concerning the nature of the reaction that takes place during the decomposition of greases when packed in ball bearings and placed in storage. It appears to be clear, however, that the reaction results in the production of organic acids which are corrosive, and in a change in the state of dispersion of the soap in the grease, the latter effect doubtless being occasioned by the former."

C. "Our explanation of the reaction which takes place when greases are spread in thin films on highly polished steel bearings in storage for long periods of time is that grease in this condition favors oxidation due to the relatively large area exposed to the air. Both the saponified fat or soap and the mineral oil are subject to such oxidation. Naturally, soap stocks of a highly unsaturated nature are more subject to this oxidation than stearates or saturated fatty acid radicals. Most all lubricating greases contain small amounts of free fat which have escaped saponification even though the grease may contain appreciable quantities of free alkali. This free fat is also subject to decomposition and consequent formation of free fatty acid. The amount and distribution of the free alkali in the grease is an important factor in preventing fatty acid formation. In some greases the free alkali exists in small highly concentrated particles or nuclei and is not available for reaction with free fatty acids, as they are formed by decomposition."

2. Effect of Bacteria, Enzymes and Oxygen.

A. "Of these three possibilities, we are inclined to believe, as stated under (1), that oxygen is the most important factor concerned with the decomposition of greases. It is doubtful whether bacteria or enzymes play any role in such decomposition, although we must admit that we have no definite proof."

B. "It is definitely known that oxygen causes this decomposition. It is probable that bacteria and enzymes also effect the decomposition but the evidence for this is slight."

C. "We believe that oxygen and bacteria are important factors effecting the deterioration of lubricating greases. We are not at all certain that enzymes are the activators which promote appreciable oxidation as it is our impression that this class of product ordinarily associated with living animal and vegetable matters is quite sensitive to changes in environment, and that their presence inactive. Since as yet enzymes in a grease would render them have not been isolated, we hesitate to blame them for any particular difficulties encountered with lubricating greases."

3. Hydrolysis of Greases.

A. "It is to be doubted whether hydrolysis of the grease has any significance as far as stability against decomposition is concerned. This is especially true where the grease contains a slight excess of alkali which would tend to decrease the tendency towards hydrolysis that might be encountered with a neutral or slightly acid product."

B. "In the decomposition of grease the hydrolysis of the soap causes a change in the state of dispersion of the soap. However, this can hardly be regarded as a fundamental effect but is rather the consequence of the formation of acids."

C. "We do not think that hydrolysis is an important fac-

*This article presents parts III, IV, and V of the paper entitled "Ball Bearing Lubrication And The Investigation of The Decomposition of Ball Bearing Greases" given by the same author before the Third Annual Convention of the Lubricating Grease Manufacturers Association, Oct. 14-15, 1935, Chicago, Ill.

[1]Marlin-Rockwell Corp., Plainville, Conn.

Your operation

If your refinery is running below par, if your sales and earnings are lagging, if the balance sheet gives you a pain, you need an operation—Dubbs operation

Dubbscracking operation is bringing soundness and vigor to many a refining business that was ailing—some very sick

And well-earned dividends to its stockholders—and praise for the good judgment of the executive who installed Dubbscracking

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

tor in grease decomposition. It is, of course, admitted that certain types of soda base greases, particularly those containing sodium or potassium resinate, are definitely hydroscopic in that they will take up appreciable quantities of moisture from the air. This process can probably proceed far enough so that such moisture will be brought into contact with the metal surface and thus promote rusting and deterioration of the metal surface. We do not, however, have definite and tangible proof of this latter point."

In the light of our own experience and tests, and taking into consideration the mentioned differences of opinion among lubricant engineers, we believe that regardless of the manner in which the problem is approached, it is desirable to call one's attention to the fact that lubricating greases are primarily mixtures of materials which are not in a permanent state of equilibrium, and therefore a small change one way or the other has a tendency to break up this equilibrium and cause failure in the grease.

ONE must also bear in mind that these changes are physical as well as chemical. There is no question but that the most active deterioration occurs in the mineral oils used in compounding the greases, and that the chemical and physical changes involved in the decomposition of the fats used for making the soaps is of secondary importance. There are factors however, which must be taken into consideration, such as the quality of the mineral oil and soap stock with respect to their resistance to oxidation. The presence of free alkali, water, organic acidity, free fat, and various other inorganic salts must also be dealt with in a discussion on the decomposition of greases.

There is experimental proof that oxidation of oils begins by the direct attachment of oxygen molecules to oil molecules. The additional compounds in this case are most probably peroxides. Since these peroxides are chemically active, they act as catalyst and promote oxidation of substances at ordinary temperatures which would otherwise require high temperatures for their decomposition. Therefore, it is obvious that an improperly finished oil containing even a small amount of oxidizable substance, becomes a suitable catalyst for the decomposition of greases even at low temperatures.

As an illustration of this fact we cite a case in which we experimented with a light naphthenic coastal oil for washing and cleaning bearings. These bearings were wrapped in waxed paper with some of this light naphthenic oil remaining on them, and packed in cardboard cartons for a period of approximately three (3) months with no other slushing compound being used. After a period of three months the bearings were found in a semi-locked condition. Apparently the oil used for washing and cleaning these bearings collected at the foci of the ball with the races due to capillary action and oxidized, forming a gummy, tenacious product which acted as an adhesive that caused the bearings to run rough and in some cases become locked.

We admit that perhaps electrolysis and hydrolysis may not be among the important factors in the decomposition of greases. Nevertheless, we have experienced cases in which oxidized greases contained large amounts of iron, and it is a well known fact that iron is a good catalyst. Since the total acidity in some cases of the badly oxidized greases was relatively low, and not active enough to cause corrosion or etching to the bearing members, the presence of iron can only be explained by the action of electrolysis which was favored by the presence of water or moisture.

We know that recently experiments have been performed with anti-oxidents in the retarding of the oxidation of fats, but we have as yet seen no information on inhibitors used for retarding oxidation of mineral oils. Some of the inhibitors now being used for fatty oils, etc. are:

"Hydroquinione, Alpha-Naphthol, Arcinol, Thymohydroquinone, Guaiacol, Resorcinol, and Fractions of the unsaponifiable liquids, of wheat germ oil and palmoil." (J. Industrial & Engineering Chemistry, Volume 27, (1935) P. 724.)

There is no question but that this decomposition of grease is materially reduced by using a stable mineral oil and a soap of good quality fat which has been properly blended, with due attention being given to the heating, cooling, and mixing of the ingredients, so as to form the most stable equilibrium of the emulsion. Inhibitors no doubt tend to prevent decomposition, but not a sufficient length of time has passed to correctly judge their efficiency. We would gladly welcome information on the action of inhibitors in the prevention of the decomposition of greases.

IN THE selection of a fat used in making soaps, the simpler the composition, provided it is a fat that contains all saturated compounds, the less trouble it is liable to cause in making a high grade grease. Therefore, fats of the stearic and palmatic acid groups form the most stable soaps, provided they are of good quality and well saponified. It goes without saying that a low grade impure tallow which consists mostly of palmatic and stearic acid glycerides does not make a satisfactory soap, although it contains saturated fatty acids, because of the small amount of oxidizable impurities which these low grade tallows contain.

We have performed experiments on the Bacteria and Enzymes content of both Sodium and Calcium soap greases. These greases contained from 15.0 to 20.0 per cent of soap and were compounded with an oil of a viscosity of approximately 300" at 100 F S. U. These new greases, which had been exposed to atmospheric conditions at room temperature for approximately three weeks, were found to contain no indications of the presence of Enzymes.

The method we used for the determination of enzymes is the method described in U. S. De-

partment of Agriculture, Bureau of Soils—Bulletin No. 36 (1909).

The bacteria were determined by smearing a small amount of the sample of greases on a standard gelatine culture media and incubating at 20° C for a period of a week. Another method for determining bacteria was also tried. In this method a stab was made in a test tube containing standard gelatine media and incubated for a period of one week at 20° C. No signs of bacterial growth was noted in any of these tests.

Acidity in Greases

In our opinion, good ball bearing greases should have not more than .1 per cent F. F. A., (Free Fatty Acid) expressed as oleic, nor should they contain more than .25 per cent of free alkalinity, calculated as NaOH.

It is common knowledge that greases increase in acidity after use. The difference of opinion as to the harm that this increased acidity causes to ball bearings is confusing. Experience does not seem to help us much either, for we have had cases in which much trouble has been caused by greases which had a relatively lower F. F. A. content than other greases, which one would expect to cause trouble due to the unusually high F. F. A.—We are here referring to the F. F. A. in used greases.

It is admitted that the F. F. A. determination does not tell us much more than the fact that acids are present in the grease. The method does not differentiate between acids which are inactive and those which are active.

By inactive acids, we have in mind the fatty acids which are insoluble in water and which have more than ten (10) carbon atoms in it's molecule. Stearic, palmetic, and oleic acids are the common fatty acids of this group. All fatty acids which contain less than ten (10) carbon atoms in their molecules are soluble, some more than others. These acids are volatile and are mostly liquids at ordinary temperatures. Acetic, butyric and propreonic acids are the common acids of the volatile active group. We are presenting below some of our results on the investigation of active acidity:

Since the active acids are volatile we attempted to separate them from the greases by first, cracking the grease with phosphoric acid and then steam distilling the mixture. The hydrogen ion concentration (Ph) of the distillate was determined and finally it was titrated with a Leeds & Northrup quinhydrone potentiometer.

	Initial Ph	Ph Tenfold Dilution	Difference
Grease A	3.55	4.25	0.7
Grease B	3.70	4.30	0.6

F.F.A. as Oleic..

A— 3.42%

B— 1.70%

A. Total volatile soluble acids calculated as acetic acid, .46%.

B. Total volatile soluble acids calculated as acetic acid, .28%.

Acidity in Greases

From the above data, we draw the following conclusions—

1. In the data marked "A", the active acidity is present in quantities sufficient to cause corrosion to bearings. We are basing our opinion on the results obtained by R. F. Innes in his investigation of strong acids in vegetable tanned leathers—J. I. S. L. T. C., 15, 203 (1931).

2. The data in "B", shows the absence of strong acids. In accounting for the presence of volatile acids, we reiterate what we have said in the third paragraph of Part III. That is, these acids are formed by the oxidation of the mineral oils which first oxidize, to peroxide and finally to the fatty acids. We must add further, however, that we believe that the decomposition takes place wholly in the mineral oil, for the total volatile acids, due to tallow, is very low (1.3 MGS KOH per gram of tallow). This is equivalent to .028 per cent acetic acid in grease.

We realize that the method used for the determination of the active acidity was not developed exclusively for lubricating greases. The principle, however, is sound and was used by P. M. Kolthoff in detecting strong acids in dilute solutions. This method is the only one we could find on the problem of the determination of active acidity. There is no doubt that further investigations on the method will improve the determination of active acidity.

After a grease has once passed our tests and met with our approval as a suitable ball bearing lubricant, we have, on several occasions, experienced great difficulties in obtaining from the manufacturer uniform products comparable to the samples originally examined by us. One of our greatest problems in grease lubrication is due to this lack of uniformity of greases. We feel that a great deal can be accomplished by the grease manufacturer in standardizing their greases.

U. S. Crude Stocks Rise 445,000 Barrels

WASHINGTON, Nov. 9. — Crude oil stocks totaled 299,222,000 barrels on Nov. 30, an increase of 445,000 barrels over the previous week, according to a report today by the U. S. Bureau of Mines. Domestic oils showed an increase of 514,000 barrels while foreign crude declined 69,000 barrels. Crude stocks a year ago were 326,757,000 barrels.

Grade of Crude	Nov. 30	Nov. 23	Change
	(Thousands of Barrels)		
Penna. grade	4,521	4,632	— 111
Other Appal.	841	839	+ 2
Lima-N. E. Ind.-Mich.	1,242	1,305	— 63
Ill.-S. W. Ind.	11,135	11,126	+ 9
N. La. and Ark.	10,180	10,562	— 382
W. Tex. and S. E. New Mex.	29,287	28 890	+ 397
East Texas	21,785	21,222	+ 563
Other Mid-Cont.	132.192	132,333	— 141
Gulf Coast	25,004	25,386	— 382
Rocky Mountain	26,597	26,718	— 121
California	33,477	32,734	+ 743
Domestic	296,261	295.747	+ 514
Foreign	2 961	3,030	— 60
Total crude	299 222	298,777	+ 445

New PAB Chairman Visits Field

WASHINGTON, Dec. 9 — George W. Holland, formerly with the oil division of the U. S. Geological Survey, who was recently appointed chairman of the Petroleum Administrative Board, left here December 7 on a trip to the California oil fields, returning through the Mid-Continent and stopping off in East Texas.

Adequate Equipment Necessary to Win Share Of Increased Lubrication Business

By H. O. Schramm*

A VISITOR to any of the automobile shows, held in various parts of the country last month, could not help but notice the enthusiasm and optimism of the personnel representing the automobile industry. The attitude of these individuals was based on the sales made by their respective companies during 1935 and the indication that further increases in the sale of automobiles will be made during 1936. Business, insofar as the automotive people are concerned is very definitely picking up. There is every reason to believe that there will be more new and also used cars on the road this coming year than in any year since 1930.

More cars in operation means a larger market for petroleum products, and all wide awake service station operators are now figuring out ways and means whereby they can secure their legitimate share of this increase in business volume. The retailer who intends to secure his rightful share must prepare for it—and the time for so doing is now.

This new business can only be secured by doing an honest, intelligent and continuous selling job, accompanied by good service with modern equipment, in neat and orderly service stations. All Service station operators can utilize their spare time in preparing for their participation in the profits to be derived from increased business, by making both the interior and the exterior of their stations presentable and inviting to the motoring public. Volumes have been written on the subject of cleanliness and orderliness at service stations, but unfortunately, there are still thousands of locations that need vast improvement in this respect.

After the station has been cleaned up, the next step is to take an inventory of equipment. No trade or business of any type can function without the proper tools peculiar to that business and those tools must be in good working order and must meet the new demands of modern business methods. To be specific, let us confine the remainder of this article to the equipment pertaining to the lubrication of automobiles at service stations.

Ten years ago, the average station was greasing cars with equipment consisting of a hand operated grease gun, a gear grease bucket, a spray gun for spraying springs, and a heterogeneous collection of pliers, end wrenches etc. The operator using these tools in servicing cars did so through the medium of a creeper, a pit or a wooden rack. Even this was an improvement over the days when father used to spend an entire Saturday afternoon or Sunday morning removing grease cups, filling them with "hard oil" and replacing them in order to grease the family's means of transportation.

However, that was in the old days and old time methods just will not do in this day and age. When the present type of automobile was introduced a few years ago with a characteristic of high speed without sacrificing either safety or comfort, specilized lubrication entered the picture as an important factor in its maintenance. The proper functioning of this present day vehicle is dependent to a very great extent upon the proper application of a number of different kinds of lubricants. In order to properly apply these required types of lubricants, the use of special equipment is necessary. Furthermore, due to improvements and innovations made in the models of cars presented to the public each year by the automobile manufacturers, equipment in order to be most adequate for properly servicing the lubricating requirements of these cars must be modernized to keep pace with them.

For example, previous to the release of the 1934 models, cars could be lubricated equally as well on lifts, racks or pits. Of course, each type of device had its staunch supporters, and it can be truthfully stated that each had its advantages and disadvantages. However, when the 1934 cars made their appearance equipped with front wheel suspension units, it became necessary for all service stations using free wheel lifts to purchase additional equipment. The free wheel lifts would not accommodate cars with the front wheel suspension units of the type found on certain models sponsored by Chevrolet, Chrysler, Pontiac, Oldsmobile, Buick, La Salle, and Cadillac. Therefore lifts had to be modernized by the purchase of adapters, before they could function on the new cars of that type.

At the same time, car manufacturers placed additional skirting on their models in order to further their development of streamlining. This almost rendered the use of pits for lubrication work obsolete. While not wholly impossible, it is impractical to reach many of the lubrication points on the chassis from the pit. Previous to the streamlining era these points were readily accessible from the floor level. Now, however, the low-hanging skirts prevent this from being done and a lift is almost a necessity. It is a necessity if a lubrication job is to be done quickly and efficiently, and if the customer is to be well pleased with the service rendered.

When an installation of a lift

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is made, it is essential that the air compressor be of a size adequate to handle the extra burden placed upon it. Many an operator has installed a lift and then found out later that he could not render efficient service due to the fact that his antiquated compressor did not possess sufficient horsepower, or was not in good working condition. There may be times when a car owner will wait for the air tank to "come up" but the chances are that he will not be very pleased about it and when he needs lubrication service on his car again, he very probably will seek a station where he can secure efficient service quickly.

A constant, sufficient supply of air is particularly necessary in those service stations where the specialized lubricants are applied through the medium of air actuated grease guns. While it is quite true that the various required lubricants can be applied with hand operated guns, modern practice calls for air operation of this specialized equipment due to its efficiency and speed.

Air powered hand gun sets provide all the speed and convenience of power operation with specialized lubricants—without the heavy investment that would be necessary for the purchase of large units of equipment. A service station operator contemplating acquiring new lubricating equipment of this type will need a minimum of six guns in order to handle the various lubricants recommended by the majority of car manufacturers. A typical set, such as is being marketed by practically all manufacturers of equipment will consist of the following:

1. 1—Power Unit with Speed Coupler Connector
2. 1—25-ft ¼-inch Air Hose Assembly with Speed Coupler
3. 1—Oil Type Hand Gun (8 oz. Capacity) with Curved Oil Nozzle and Small Flexible Nozzle
4. 1—Oil Type Hand Gun (12 oz. Capacity) with Curved Oil Nozzle and Large Flexible Nozzle
5. 1—Water Pump Gun (6 oz. Capacity) with Short Straight Hydraulic Adapter and Hydraulic to Alemite Adapter
6. 1.—High Pressure Lubricator with Whip End Hose, Hydraulic Adapter and Pin Type Release Adapter
7. 1—Intermediate Pressure Lubricator with Whip End Hose, Screw Type Non-drip Nozzle, Pin Type Release Adapter and Hydraulic Adapter
8. 1—Low Pressure Lubricator with Plain Grease Nozzle.

The above set of equipment will provide a fast and most practical method of rendering specilized lubrication service and, with the exception of gear oil dispensing units, is a complete set-up in itself. The power unit is instantly and interchangeably attachable to either the high pressure, intermediate pressure or low pressure lubricators listed at points 6, 7 and 8 above and when so attached the units form perfectly balanced pneumatic type grease guns that will efficiently handle any type of lubricant.

THE small oil type hand gun can be used for servicing wet clutches and some shock absorber units. The large oil type gun will be found useful in servicing the oil type universal joints and the front wheel suspension units of the Dubonnet type found on Chevrolet and Pontiac cars and can also be used for sucking used gear oil from the transmission and differential. Of course, it is necessary to clean the gun thoroughly after each of these different operations in order to avoid contamination of products, however this is a simple operation with a straight suction oil gun of this type.

The water pump gun as its name implies is used for the servicing of water pumps with a special water pump grease. Inasmuch as the amount of special water pump grease used is slight the gun recommended is small in size, which results in ease of handling and economy of operation. The high pressure gun or lubricator will dispense chassis lubricant of the type required for the majority of lubrication points on the chassis. The intermediate pressure gun should be used for the application of fibre grease to those units that require a lubricant of this type, while the low pressure gun or lubricator should be used for servicing those units such as steering gears and oil type universal joints with a fluid type of lubricant.

To complement the hand gun set, a gun display rack is virtually a necessity. Here again, common sense and judgment must be exercised in the choice of the unit. A gun rack should have the qualifications of convenience, practicability, flexibility of arrangement and distinct eye appeal. An easel type gun board not more than four feet high, mounted on large swivel castors, containing a rack for gun fittings and a tray for small tools will prove most practical. It can be rolled right up to the car that is being serviced and the lubrication salesman will have all the necessary equipment at his fingertips.

The type of gun board which is fastened permanently to the wall of the lubritorium has the distinct disadvantage of causing a loss of time occasioned by the necessity of the operator taking innumerable steps back and forth from the gun board in order that he may use the various guns and tools that he requires to properly service the car.

While the guns listed above can all be filled by hand methods, it is desirable, in the interest of speed and cleanliness of operation that filling buckets be provided for the three lubricators listed in positions 6, 7 and 8. Due to the fact that through the use of filling buckets the guns will be filled and ready for instant use when a customer drives into the station.

In addition to the gun equipment for specilized lubricants, a modern service station must possess additional gear lubricant dispensing equipment. A few years ago all cars used gear grease and to satisfy the requirements of transmission and differential units on those cars, one gear lubricant dispenser was all that was necessary. This one unit dispensed a heavy grade of product in the summer and a lighter grade during the winter months.

Then car manufacturers changed their recommendations to a gear or transmission oil for passenger cars and the same policy in dispensing equipment held true, with the exception that those stations catering to both passenger car and commercial vehicle trade found it necessary to carry two entirely different products, gear grease for the commerical units and gear oil for the passenger cars.

(*Continued on page* 80)

• MARKETS •

CLEVELAND, Dec. 9

OIL markets along the eastern seaboard continued to hold at the higher prices attained recently, while the middle western and Mid-Continent markets last week regained some of the ground lost the week before. On the west coast an advance in California crude prices, while coming too late to affect the market last week, was hailed as a reflection of the better prospects for market stability.

The high rate of crude runs and the increasing gasoline stocks were still a market threat, but the markets apparently were absorbing the surplus better than they were just before the end of November. There was, however, some indication that crude runs would be cut particularly in the districts in which gasoline stocks had become somewhat burdensome.

Activity at the Gulf was more noticeable. Several inquiries were being circulated among sellers. One sale of a part cargo of 64-66 375 e. p. gasoline for January lifting was made to a French buyer. The price paid was reported to be 5.75 cents with that price being generally quoted on other export business. This was an increase of 0.25 cent over quotations made at the end of November. Gasoline for coastwise movement was also held for slightly higher prices. Most suppliers were asking 5.625 cents for 65 octane unleaded gasoline for coastwise shipment.

Mid-Continent low octane gasoline recovered the 0.125-cent reduction which was made by most refiners the previous week. While reports indicated the new price was none too steady, some large company buying tended to keep all the surplus offerings off that market. Jobbers were buying on a hand-to-mouth basis in order to keep their stocks down. Apparently they were preparing to take advantage of any reduction that might materialize.

While no change in gasoline prices was noted in the Mid-Western market, large company buying had about cleaned up offerings in East Texas which had been one of the sources of supply for Chicago resellers. This buying materially reduced offerings, and bolstered the market.

Kerosine was the most active item in eastern seaboard markets. Socony-Vacuum announced an advance of 0.25 cent in tank car and barge prices for kerosine at its northern seaboard terminals. The advance was not effective until today, but it had a stimulating effect on the market last week. As this is written word comes that Socony-Vacuum also advanced its tank wagon prices throughout New York and New England.

Although shoved into the background by kerosine, gasoline remained tight along the eastern seaboard. Bad weather reduced consumption.

Standard of California took the lead in advancing prices of California crude on Dec. 6. All other buyers met the advance. The new prices represent increases from no change for the lower gravities to 21 cents for the higher gravities. The average advance was 10 cents, restoring prices to about 10 cents a barrel below prices prevailing before the drastic cut late in August.

The 0.5-cent advance in retail prices of premium and regular gasoline made on Nov. 27 in California was well maintained, although the market for third grade was still unsettled by surplus offerings. Failure to reduce runs with the drop in consumption has the same effect on that market as it does in other areas.

Natural gasoline came in for its share of activity. Manufacturers found the demand exceeded the supply. In some instances they found themselves oversold and had to bid up the price in the open market to cover their commitments. Few manufacturers were making sales on a long time basis as the threat of reduced production in the Panhandle might reduce supplies, resulting in still higher prices.

Prices in the wax market ranged from 2.15 to 2.5 cents, but most sales were made at around 2.25 cents. Most sellers were about sold up for the remainder of the year. Both buyers and sellers hesitated to make commitments beyond the first of the year.

Varying opinions regarding the rate of throughput and the position of gasoline stocks were expressed by traders last week. Consensus seemed to be that taken as a whole crude runs are slightly too high.

Most observers agree that gasoline stocks should increase during the month, but they feel that they are going up too fast. This is particularly true in the Indiana-Illinois-Kentucky and Oklahoma-Kansas-Missouri districts. The last week of November runs in those districts totaled 566,000 barrels daily against 622,000 barrels daily the previous week. At the same time stocks of finished motor fuel increased in those districts 3,165,000 barrels, most of the increase being in the Indiana-Illinois-Kentucky district. Consumption in the latter district fell due to the wintry weather.

N. P. N. Gasoline Index

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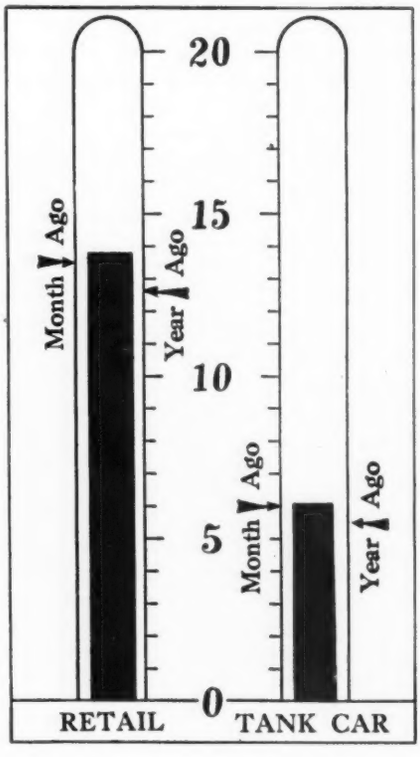

Retail index of 50 cities, ex-tax, and tank car is a weighted average of 13 wholesale markets for middle octane gasoline. The gasoline price index this week represents the following price in cents per gallon:

Date	Retail	Tank Car
Dec. 9	13.77	6.06
Month ago	13.60	6.03
Year ago	12.66	5.41

Mid-Continent

Third Grade Up

TULSA, Dec. 7

AFTER recovering from an 0.125-cent price reduction, Mid-Continent low octane gasoline was holding at levels that prevailed throughout most of the summer and fall months.

Prices for third-grade gasoline slumped 0.125 cent the last week of November under the pressure of increased offerings. By the close of the first week of December, however, prices had worked back to their former position.

Much of the distress gasoline available the previous week had been absorbed by large company buying. This buying furnished an outlet for accumulating gasoline stocks at many refinery centers. Purchases of low octane gasoline were made, for the most part, at 4.75 cents f.o.b. Group 3.

The market still was being harassed by odd-car offerings of gasoline. These supplies were magnified by a lack of open market purchases by jobbers.

Refinery runs at most Mid-Continent refineries were being curtailed in order to prevent further stock accumulations.

East Texas gasoline was becoming less of a factor in the Mid-Continent and Mid-Western markets. Production has been curtailed considerably over the last few weeks. Some shipments also were being held up through lack of federal tenders—commonly called "paper." Removal of East Texas as a permanent factor in the Northern gasoline market was indicated by some observers this week. They pointed to the fast-narrowing differential between dock and tank car prices of East Texas gasoline. Should dock prices reach the tank car level, East Texas refiners could more profitably dispose of their products to local Texas outlets. This would leave to other refining districts some of the business normally supplied from East Texas. However, there is a limit to the volume of gasoline that can be absorbed within Texas. Also higher prices for Texas shipment—on which state tenders only are necessary—might lead to the re-opening of refineries that have been shut down.

High octane and high gravity motor fuels were fairly steady during the past week. Prices held at generally unchanged levels.

Another 0.125-cent advance was chalked up for natural gasoline the past week. The upward movement was governed by several factors. During the past week manufacturers disposed of most of their day-to-day production to regular outlets. Then during the middle of the week additional orders made it necessary for several to buy in the open market to cover commitments. There was little Grade 26-70 available for immediate shipment. Due to the possibility of curtailed Panhandle operations, manufacturers were not inclined to sell very far ahead.

Export and coastwise inquiry has been brisk the past week or two. At least two cargoes of natural were sold at the Gulf, probably for coastwise shipment. The two export inquiries placed a week or two ago apparently have not been filled.

Kerosine was sluggish in most Mid-Continent districts. Supply and demand were about balanced. Refiners with premium-grade kerosine reported a fair movement of their product. Regular grades, however, were not in brisk demand. Prices were unchanged.

Volume of Mid-Continent lubricating oils moving to open market and contract purchasers was heavy.

Eastern

Kerosine on Upgrade

NEW YORK, Dec. 7

ANNOUNCEMENT of an advance of 0.25 cent a gallon in tank car and barge prices on kerosine at northern seaboard terminals, effective Dec. 9, was the high spot of the week ended Dec. 7 in the eastern markets.

Socony-Vacuum made the announcement on Dec. 6 and a number of other major and independent suppliers said they would follow. Socony's advance is effective at all of its seaboard terminals from New York harbor north. Its new tank car and barge prices at New York harbor, Boston and Providence will be 5.25 and 5.125 cents respectively.

While a number of suppliers said they were advancing their quotations, others had not decided. They indicated that movement of kerosine still was not heavy enough to keep distress goods from the market even though the demand had improved considerably following the colder weather which prevailed during the week.

Supporters of the advance pointed out that with a minimum price of 4 cents at the Gulf and charter rates at around 32 cents a barrel for clean boats, there was little margin of profit even at 5.25 cents f.o.b. the harbor. However, some suppliers said that lack of cold weather in November had hampered kerosine sales and that part of the goods in storage had been brought in when costs were lower.

The gasoline market remained in good condition along the eastern seaboard, although demand has fallen somewhat since early November. Prices however remained steady at practically all points.

California

Third Grade Unsettled

LOS ANGELES, Dec. 6

PACIFIC Coast petroleum markets the past week did not show the improvement that had been expected as a result of progress made in reaching an agreement on a voluntary marketing code.

The advance of 0.5 cent a gallon on standard brands and Ethyl gasoline made by major companies on Nov. 27 was uniformly maintained but did not lead to firmer quotations on third grade brands or on independent competitive brands. Some improvement was noted in secondary company prices for third-grade gasoline but it was not sufficient to offset the softness of competitive brands, particularly in the Los Angeles Basin and San Joaquin Valley.

Expansion of independent plants in the Valley had brought gasoline markets in those areas to the saturation point during the summer months. With a seasonal decline in demand, the independents sought to hold their gallonage by cutting prices or by extending their distribution to less competitive territories.

Tank wagon quotations on competitive brands, nominally figured at 9.5 cents a gallon, inclusive of 4 cents tax, were reported actually at 8.5 cents a gallon, and in some instances were reported down to 8 cents. The fact that quotations in the Los Angeles Basin area generally ranged from 8.75 to 9 cents a gallon, with only small quantities offered at 8.5 cents, resulted in a considerable increase in the quantity of gasoline trucked from the Valley to the Basin area. Gasoline quotations in northern California, Oregon and Washington continued relatively firm.

Advances of 10 cents a gallon in posted prices of average grades of refinable crude, initiated by Standard Oil Co. of California, Dec. 6, were expected to assist in stabilizing the refined products market, although no immediate advance in gasoline prices was considered probable. However, another advance in crude prices was considered likely in the near future, coupled with proportionate increases in gasoline quotations.

Fuel oil prices continued firm and slight advances were registered in quotations at independent plants in both the Basin and Valley areas. Posted prices at these plants ranged from 60 to 65 cents a barrel in the Valley, and from 65 to 70 cents in the Basin. A contract, covering deliveries over a 12-month period, was reported made by a Valley refiner at 75 cents a barrel. Major company quotations on fuel

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oil ranged from 75 cents a barrel in the Valley to 95 cents in the Basin area, f.o.b. refinery. At all major company plants, diesel oil and stove distillate were quoted, respectively, at $1.47 and $1.89 a barrel.

Uncertainty as to the status of oil under the Administration's interpretation of the neutrality act, resulted in a decline in spot shipments of gasoline and other petroleum products to foreign ports. Exports shipments were said to be generally of a routine character, made under contract.

Pennsylvania

Market Quiet

CLEVELAND, Dec. 7

MOST products in the Pennsylvania market were steady the first week of December and most traders were optimistic concerning the outlook of that market. Open market business was slack, but contract movement was large enough to keep offerings in fairly good balance with supply, reports indicated.

There seemed to be no question during the week that jobber buying was of the hand-to-mouth variety and would continue so until after the year-end inventory period. This reduced volume of buying that gave rise to some of the bearish sentiment. Refiners' inventories, generally, were reported in good shape, however, with little indication that prices would be cut to stimulate purchases.

Crude runs to stills continued at a high rate. Reports showed that stocks of crude still were declining indicating throughput higher than production. Some refiners said they intend to reduce runs so that their inventories will be lower at the year end. Some refiners feared that a further reduction in crude stocks would result in another crude advance. In some quarters it was believed that crude stocks will decline even though crude runs are cut because colder weather is tending to slow down production.

Fuel oil and 65 octane gasoline were getting the most play during the week. The heavier demand for fuel oil from industrial plants combined with little or no reduction in cracking operations tended to make fuel oil scarce in some quarters. In the Bradford-Warren district practically all the December production of fuel oil had been sold and in the other districts some buyers reported fuel oil difficult to obtain at some points.

No additional offerings of 65 octane gasoline were made as far as could be learned. Just how much was available for delivery over the remainder of the month was difficult to determine, but

most sellers said they would have little to move.

Although there was plenty of U. S. Motor gasoline available for shipment, demand for reforming and blending purposes was sufficient to keep inventories from becoming burdensome. Most refiners were quoting 5.25 cents for U. S. Motor.

Kerosine was moving better in most sections. Higher prices along the eastern seaboard benefited the Bradford-Warren district refiners by widening their marketing area. They were getting much more play from buyers along the canal. No price shading was reported.

Inventories of bright stock still were reported relatively low for this time of year. Export shipments were reported largely responsible for most of the movement. Prices were steady with offerings well held.

While neutrals were not as scarce as they were earlier in the year, few refiners were offering these oils on the open market. Prices were well held.

Coastal

Market More Active

NEW YORK, Dec. 7

CARGO gasoline markets were more active at the Gulf in the week ended Dec. 7 and prices generally were higher, both for export and domestic shipment.

Inquiries were reported for several cargoes for export movement but only one sale was reported. This came early in the week and involved a part cargo of 64-66, 375 e.p. gasoline for late December lifting to France. The reported price was 5.75 cents f.o.b. the Gulf.

American exporters reported quoting on two other French inquiries for 64-66, 375 e.p. gasoline for January lifting but said that apparently these deals either had not been closed.

One American refiner was reported to have inquired for a cargo of gasoline for shipment to South America but had difficulty getting quotations on the type of material wanted. This cargo still was open at last reports.

Quotations for 64-66, 375 e.p. gasoline generally were at a minimum of 5.75 cents f.o.b. the Gulf as the week ended compared to quotations of 5.5 cents for export sales at the end of the previous week. Other grades of gasoline for export movement also were quoted 0.25 cent above last week.

Gasoline for coastwise movement from the Gulf also was held at higher prices by the end of the week. Buyers who had sounded out the market reported that there was little gasoline available for prompt lifting and that prices were at least 0.125 cent higher than those which have prevailed for the last few months.

One buyer who tried to obtain a cargo of 65 octane, unleaded gasoline said that 5.625 cents was the lowest quotation received, while another said that 5.75 cents was the lowest he had heard. However, no cargo sales were reported.

The markets for kerosine and light fuel oil at the Gulf also were reported in good condition although no sales were reported during the week. Most of the quotations heard on kerosine still were at 4 cents f.o.b. the Gulf, while suppliers generally reported that 3.25 cents was their idea of the market on No. 2 fuel oil. Grade C bunker oil apparently still was fairly well pegged at 70 cents, the Gulf.

Chicago

Market Improved

CHICAGO, Dec. 7

THE Mid-Western tank car gasoline market seemed in a fair way to regain some of the ground lost the past few weeks. Large company buying in East Texas has virtually dried up one of the sources of supply for Chicago resellers.

While open market movement of gasoline continued light, shading of prices to stimulate buying was confined to odd car lots. Virtually all sellers were quoting at least 4.625 cents for low octane U. S. Motor.

Buying by one refiner in the Chicago market which was reported last week proved to be limited. Its effect on the market was more in the nature of bolstering trade morale, than giving of relief. When this inquiry was reported in the market several resellers advanced quotations, which have not been reduced since.

The increase of over a million and a quarter barrels in gasoline stocks at U. S. refineries, shown in the American Petroleum Institute report of refinery operations, caused some comment among Chicago traders last week.

Several believed that this was a normal seasonal increase and similar increases would be recorded during the next several months. It came, however, in the face of a decrease of 61,000 barrels in daily average crude runs to stills. There were others who believed that this stock increase was too large. They indicated that a healthy reduction in refinery operations would have to follow, if present market positions were to be maintained.

The fact that consumption has fallen off sharply was not questioned by Chicago sellers. The action of the tank car market was a definite reflection of extremely slow replacement buying.

Despite the increase in crude throughput and the heavier gasoline stocks, tank car gasoline prices, in the Mid-Western market, are currently 0.625 cent per gallon higher for the low octane grade, and 0.875 cent higher for the middle bracket material than they were a year ago.

The crude oil market seems to be the basis for a good bit of speculation among Chicago traders. Many believe that higher prices will prevail after the first of the year.

No material change was noted in the general retail market in Standard of Indiana territory last week.

Kerosine was righting itself in the Mid-Western market. The market for this commodity was slightly top-heavy several weeks ago, but movement in some instances as distillate, has lessened the available supply, and price shading was diminished.

Wax

Market Steady

NEW YORK, Dec. 7.—Scale wax markets remained steady during the week ended Dec. 7, although a fairly wide range of prices was heard. Demand was reported holding at a satisfactory level and a number of suppliers said they were out of the market entirely for December and the first half of January.

Prices for scale wax ranging from 2.15 to 2.5 cents a pound were heard, but by far the majority of traders were quoting 2.25 to 2.3 cents a pound. The 2.15 cent wax was reported to be material which was purchased some time ago for resale purposes, while the 2.5-cent quotations were nominal due to lack of offerings.

New Jobber Outlets

LOS ANGELES—Extension of Associated Oil Co. marketing activities into central Arizona with the appointment of distributors in Phoenix and Tucson was announced today by P. E. Allan, domestic sales manager of the company.

The new distributors are the Home Oil Co. of Arizona for Phoenix and M. P. Walker for Tucson. Previously Associated has been represented in Arizona by distributors in Yuma and

Other new distributorships announced by Mr. Allan include Lloyd R. Young for Bishop, Calif.; E. G. Mansfield for Redmond, Oregon; A. E. Alford for Angels Camp, Calif.; and B. W. Kildare for Pescadero and Half-moon Bay, Calif.

REFINERY TANK CAR MARKETS

Prices in cents per gallon, tank car lots, except where otherwise noted. Prices are those to domestic jobbers who resell to consumers. They do not represent inter-refinery sales, or sales for export. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Gasoline *and* Naphtha

	Dec. 9	Dec. 2	Nov. 25
Oklahoma			
48-54, 450 e.p. naphtha....	4.625– 4.75	4.625	4.625– 4.75
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	4.75 – 4.875	4.625– 4.75	4.75 – 4.875
63-70 octane (regular)..	5.625– 5.75	5.625– 5.75	5.625– 5.75
71 and above.....	.....	.....	.....
60-62, 400 e.p. gasoline....	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
64-66, 375 e.p. gasoline....	4.875– 5.00	4.875– 5.00	4.875– 5.00
68-70, 350-360 e.p. gasoline	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
Western Penna. (Quotations and/or sales prices to car unloaders)			
Bradford-Warren:			
52-54 naphtha.....	5.125– 5.25	5.125– 5.25	5.125– 5.25
Motor gasoline:			
U. S. Motor (58-62°)...	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375
Minimum 60 octane....	6.75 – 6.875	6.75 – 6.875	6.75 – 6.875
Minimum 65 octane....	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125
Minimum 70 octane....	.....	.....	.....
64-66, 390 e.p. gasoline....	5.375– 5.50	5.375– 5.50	5.375– 5.50
68-70, 350-360 e.p. gasoline	5.625– 5.75	5.625– 5.75	5.625– 5.75
Other districts:			
52-54 naphtha.....	5.125– 5.25	5.125– 5.25	5.125– 5.25
54-56 naphtha.....	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375
Motor gasoline:			
U. S. Motor (58-62°)....	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375
Minimum 60 octane....	6.75 – 6.875	6.75 – 6.875	6.75 – 6.875
Minimum 65 octane....	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125
Minimum 70 octane....	.....	.....	.....
64-66, 390 e.p. gasoline....	5.375– 5.50	5.375– 5.50	5.375– 5.50
68-70, 350-360 e.p. gasoline	5.625– 5.75	5.625– 5.75	5.625– 5.75
California (3c tax to be added to prices if used in state)			
54-58 U. S. Motor, 437 e.p. for in-state shipment....	5.00 – 6.50	5.00 – 6.50	5.00 – 6.50
54-58 U. S. Motor, 437 e.p. for outside state shipment	5.00 – 6.50	5.00 – 6.50	5.00 – 6.50
58-61, 375-400 e.p. gasoline, 65 octane and above....	7.00 – 8.00	7.00 – 8.00	7.00 – 8.00
†***North Texas*** (F.o.b. Wichita Falls district for shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments).			
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	4.75	4.625– 4.75	4.75
63-70 octane (regular)..	5.625	5.625	5.625
71 and above.....	.....	.....	.....
60-62, 400 e.p. gasoline....	4.75	4.75	4.75 – 4.875
64-66, 375 e.p. gasoline....	4.875	4.875	4.875– 5.00
68-70, 350-360 e.p. gasoline	5.00	5.00	5.00 – 5.125
Kansas (F. o. b. refinery, Kansas destination)			
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
63-70 octane (regular)..	5.875– 6.00	5.875– 6.00	5.875– 6.00
71 and above.....	.....	.....	.....
60-62, 400 e.p. gasoline....	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
†***West Texas and New Mexico*** (F. o. b. W. Texas and N. Mex. refinery for unrestricted shipment)			
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	4.75	4.75	4.75
63-70 octane (regular)..	5.625– 5.75	5.625– 5.75	5.625– 5.75
71 and above.....	.....	.....	.....
†***East Texas*** (F. o. b. East Texas refinery for unrestricted shipment)			
U. S. Motor gasoline, by octane numbers:			
62 and below (3rd grade)	4.625	4.625	4.625
63-70 octane (regular)..	.....	.....	.....
71 and above.....	.....	.....	.....
60-62, 400 e.p. gasoline....	4.625– 4.75	4.625– 4.75	4.625– 4.75
North Louisiana (For Louisiana and Arkansas destination)			
U. S. Motor gasoline:			
62 octane and below....	5.50	5.50	5.50
63-70 octane number....	6.25	6.25	6.25
71 octane and above....	.....	.....	.....
Arkansas (For Arkansas and Louisiana destination)			
U. S. Motor gasoline:			
62 octane and below....	5.50	5.50	5.50
63-70 octane number....	6.25	6.25	6.25
71 octane and above....	.....	.....	.....

†Refiners generally receive from 0.25c to 0.5c per gallon more for gasoline and kerosine for local or differential territory shipment.

	Dec. 9	Dec. 2	Nov. 25
Ohio (Quotations of S. O. Ohio. Delivered any point in Ohio).			
U. S. Motor gasoline.....	8.375	8.375	8.375
Above 65 octane number..	8.625	8.625	8.625

Natural Gasoline

(Prices shown f.o.b. Group 3 and Breckenridge represent majority of sales made on dates shown to blenders on the freight basis shown below, although shipments may originate in other manufacturing districts, such as East Texas, Panhandle, Southwest Texas or Kansas).

F.o.b. Group 3			
Grade 26-70.....	4.25	4.125	4.00 – 4.125
F.o.b. Breckenridge			
Grade 26-70.....	4.00	3.875	3.875
California (F. o. b. plants in Los Angeles basin)			
75-85, 375-390 e.p. for blending.....	5.00 – 5.50	5.00 – 5.50	5.00 – 5.50

Kerosine

Western Penna. (Quotations and/or sales prices to car unloaders)			
Bradford-Warren:			
45 w.w. kerosine.....	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
46 w.w. kerosine.....	4.875– 5.00	4.875– 5.00	4.875– 5.00
47 w.w. kerosine.....	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
Other districts:			
45 w.w. kerosine.....	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
46 w.w. kerosine.....	4.875– 5.00	4.875– 5.00	4.875– 5.00
47 w.w. kerosine.....	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
Ohio (Quotations of S. O. Ohio. Delivered any point in Ohio).			
Kerosine.....	6.00	6.00	6.00
Oklahoma			
41-43 w.w. kerosine.....	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375
42-44 w.w. kerosine.....	3.375– 3.50	3.375– 3.50	3.375– 3.50
Kansas (F. o. b. refinery, Kansas destination)			
41-43 w.w. kerosine.....	3.625– 3.875	3.625– 3.875	3.625– 3.875
42-44 w.w. kerosine.....	3.875– 4.00	3.875– 4.00	3.875– 4.00
†***North Texas*** (F.o.b. Wichita Falls district for shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments).			
41-43 w.w. kerosine.....	3.50 – 3.625	3.50 – 3.625	3.50 – 3.625
East Texas (F.o.b. East Texas refinery for unrestricted shipment)			
41-43 w.w. kerosine.....	3.125	3.125	3.00 – 3.125
North Louisiana (For Louisiana and Arkansas destination)			
41-43 w.w. kerosine.....	3.75	3.75	3.75
Arkansas (For Arkansas and Louisiana destination)			
41-43 w.w. kerosine.....	4.25	4.25	4.25
California (F.o.b. California refineries)			
38-40 w.w. kerosine.....	4.00 – 5.00	4.00 – 5.00	4.00 – 5.00

Gas *and* Fuel Oils

Western Penna. (Quotations and/or sales prices to car unloaders)			
Bradford-Warren:			
36-40 fuel oil.....	4.25 – 4.375	4.25 – 4.375	4.25 – 4.375
‡*Other districts*:			
36-40 fuel oil.....	4.125– 4.25	4.125– 4.25	4.125– 4.25

‡Not including Pittsburgh.

Oklahoma (F.o.b. Oklahoma refineries			
Gas oils:			
No. 1 white.....	3.25	3.125– 3.25	3.125– 3.25
No. 1 straw.....	3.00 – 3.25	3.00 – 3.125	3.00 – 3.125
No. 2 straw.....	3.00 – 3.25	3.00 – 3.125	3.00
No. 2 dark.....	3.00 – 3.125	2.875	2.875
U. G. I. gas oil.....	2.125– 2.25	2.25	2.25
Fuel oils: (Prices per barre of 42 U. S. gallons)			
28-30, zero.....	$1.15 –$1.20	$1.15 –$1.175	$1.15 –$1.175
28-30.....	$1.00	$1.00	$1.00
24-26.....	$0.725–$0.75	$0.725–$0.75	$0.725–$0.75
18-22.....	$0.70 –$0.725	$0.70 –$0.725	$0.70 –$0.725
14-16.....	$0.60 –$0.65	$0.60 –$0.65	$0.60 –$0.65

(*Continued on page 66*)

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(*Continued from page 64*)

	Dec. 9	Dec. 2	Nov. 25
Kansas (F.o.b. refinery, Kansas destination)			
No. 1 straw	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375
18-22 fuel oil (per bbl.)	$0.725–$0.75	$0.725–$0.75	$0.725–$0.75
10-14 fuel oil (per bbl.)	$0.625–$0.65	$0.65 –$0.675	$0.625–$0.65
North Texas (F.o.b. Wichita Falls district for shipment to Texas and New Mexico; Group 3 prices quoted on northern shipments).			
No. 1 straw	3.125– 3.25	3.00 – 3.125	3.00 – 3.125
No. 1 white	3.25 – 3.375	3.125– 3.25	3.125– 3.25
No. 2	3.00	2.875– 3.00	2.875– 3.00
U.G.I. gas oil	2.25	2.125– 2.25	2.125
24-26 fuel oil (per bbl.)	$0.70 –$0.725	$0.70 –$0.725	$0.70 –$0.725
18-22 fuel oil (per bbl.)	$0.65 –$0.675	$0.65 –$0.675	$0.65 –$0.675
West Texas (F.o.b. West Texas refineries for unrestricted shipment).			
No. 2	*2.75 – 2.875	*2.75 – 2.875	*2.75 – 2.875
18-22 fuel oil (per bbl.)	$0.65	$0.65	$0.65
East Texas (F.o.b. East Texas refineries for unrestricted shipment).			
No. 1 white	*3.125	*3.00 – 3.125	*3.00
No. 2	*2.75	*2.75	*2.75 – 2.875
U.G.I. gas oil	2.00 – 2.125	2.00	2.125– 2.25
24-26 fuel oil	$0.575–$0.60	$0.575–$0.60	$0.575–$0.60
20-24 fuel oil	$0.55 –$0.575	$0.55 –$0.575	$0.55 –$0.575
North Louisiana (For Louisiana and Arkansas destination).			
No. 2	3.00 – 3.125	3.00 – 3.125	3.00 – 3.125
U.G.I. gas oil	2.875– 3.00	2.875– 3.00	2.875– 3.00
20-24 fuel oil	$1.00 –$1.025	$1.00 –$1.025	$1.00 –$1.025
16-20 fuel oil	$0.90 –$0.925	$0.90 –$0.925	$0.90 –$0.925
10-14 fuel oil	$0.75 –$0.80	$0.75 –$0.80	$0.75 –$0.80
Arkansas (For Arkansas and Louisiana destination)			
No. 2	3.50	3.50	3.50
28-30 fuel oil, zero	3.25	3.25	3.25
20-24 fuel oil (per bbl.)	$0.825–$0.875	$0.825–$0.875	$0.825–$0.875
16-20 fuel oil	$0.725–$0.775	$0.725–$0.775	$0.725–$0.775
10-14 fuel oil	$0.60 –$0.65	$0.60 –$0.65	$0.60 –$0.65
California			
San Joaquin Valley, per bbl.:			
Grade C fuel oil	$0.60 –$0.75	$0.55 –$0.75	$0.50 –$0.75
Diesel fuel oil	$1.05 –$1.47	$1.05 –$1.45	$1.05 –$1.45
Stove distillate	$1.25 –$1.89	$1.25 –$1.85	$1.25 –$1.85
Los Angeles, per bbl.:			
Grade C fuel oil	$0.65 –$0.95	$0.60 –$0.95	$0.60 –$0.95
Diesel fuel	$1.05 –$1.47	$1.05 –$1.45	$1.05 –$1.45
Stove distillate	$1.25 –$1.89	$1.25 –$1.85	$1.25 –$1.85
San Francisco, per bbl.:			
Grade C fuel oil	$1.00	$1.00	$1.00
Diesel fuel	$1.68	$1.68	$1.68
Stove distillate	$2.10	$2.10	$2.00

Neutral Oils

Western Penna. (Quotations and/or sales prices to car unloaders)

Viscous Neutrals (Viscosity at 70° F.)

200 Vis. (180 at 100°) No. 3 color, 420-425 flash:			
0 pour test	25.00 –25.50	25.00 –25.50	25.00 –25.50
10 pour test	24.00 –24.50	24.00 –24.50	24.00 –24.50
15 pour test	23.50 –24.00	23.50 –24.00	23.50 –24.00
25 pour test	22.50 –23.00	22.50 –23.00	22.50 –23.00
180 Vis. (165 at 100) No. 3 color, 410-415 flash:			
25 pour test	21.00 –21.50	21.00 –21.50	21.00 –21.50
150 Vis. (143-100) No. 3 color, 400-405 flash:			
0 pour test	20.50 –21.00	20.50 –21.00	20.50 –21.00
10 pour test	19.50 –20.00	19.50 –20.00	19.50 –20.00
15 pour test	19.00 –19.50	19.00 –19.50	19.00 –19.50
25 pour test	18.00 –18.50	18.00 –18.50	18.00 –18.50

South Texas (F.o.b. South Texas refineries, for domestic shipment)

Vis. Color			
Pale Oils:	*(Viscosity at 100° F.; pour test 0)*		
100 No. 1½-2½	5.00	5.00	5.00
200 No. 2-3	7.00	7.00	7.00
300 No. 2-3	7.50	7.50	7.50
500 No. 2½-3½	8.50	8.50	8.50
750 No. 3-4	9.00	9.00	9.00
1200 No. 3-4	9.50	9.50	9.50
2000 No. 3-4	9.75 –10.00	9.75 –10.00	9.75 –10.00
Red Oils:			
200 No. 5-6	7.00	7.00	7.00
300 No. 5-6	7.50	7.50	7.50
500 No. 5-6	8.50	8.50	8.50
750 No. 5-6	9.00	9.00	9.00
1200 No. 5-6	9.50	9.50	9.50
2000 No. 5-6	9.75 –10.00	9.75 –10.00	9.75 –10.00

Note: South Texas red oil prices shown above cover oils with green cast; blue cast red oils are slightly lower in some cases.

*Nominal

Mid-Continent (Viscosity at 100° F.; F. o. b. Tulsa basis. Prices represent quotations and sales).

0 to 10 Pour Point:

Vis. Color	Dec. 9	Dec. 2	Nov. 25
Pale Oils:			
60-85—No. 2	5.25	5.25	5.25
86-110—No. 2	5.75	5.75	5.75
150—No. 3	10.00	10.00	10.00
180—No. 3	11.25	11.25	11.25
200—No. 3	11.75	11.75	11.75
*250—No. 3	13.75	13.75	13.75
280—No. 3	14.75	14.75	14.75
300—No. 3	15.25	15.25	15.25
Red Oils:			
180—No. 5	10.25	10.25	10.25
200—No. 5	10.75	10.75	10.75
*250—No. 5	12.75	12.75	12.75
280—No. 5	13.75	13.75	13.75
300—No. 5	14.00	14.00	14.00

Note: Non-Viscous pale oils (60 to 110 Vis.) with a 15 to 25 pour point are quoted 0.5c under 0 to 10 pour test oils; pale and red viscous oils (150 to 300 Vis.) with 15 to 25 pour point are quoted 1c under 0 to 10 pour test oils. Viscous oils (150 to 300 Vis.) with a No. 4 color are quoted 0.5c above No. 5 color oils

*This replaces 240 Vis. No. 3 color.

Chicago (F.o.b. Chicago refineries) (Vis. at 100° F.)

Vis. Color			
Pale Oils, *15 to 30 pour point:			
60-85—No. 2	6.50	6.50	6.50
86-110—No. 2	7.00	7.00	7.00
150—No. 3	10.00	10.00	10.00
180—No. 3	11.25	11.25	11.25
200—No. 3	11.75	11.75	11.75
250—No. 3	13.75	13.75	13.75
Red Oils, *15 to 30 Pour Point:			
180—No. 5	10.25	10.25	10.25
200—No. 5	10.75	10.75	10.75
250—No. 5	12.75	12.75	12.75
280—No. 5	13.25	13.25	13.25
300—No. 5	13.50	13.50	13.50

*60-110 vis. oils, with 0-10 pour point, bring 0.5c higher than above prices. Other oils with 0-10 pour point are quoted at 1c higher.

California (F.o.b. California refineries; Viscosity at 100° F.)

All neutral oils, 11.5c per gal. in tank car lots; and 13.5c in iron bbls., to refiners only, excluding federal tax.

Cylinder Stocks

Mid-Continent (F.o.b. Tulsa basis. Prices represent quotations and sales

Bright Stocks:			
190-200 Vis. at 210° D	20.00	20.00	20.00
150-160 Vis. at 210° D:			
0 to 10 pour test	17.00	17.00	17.00
10 to 25 pour test	16.50	16.50	16.50
25 to 40 pour test	16.00	16.00	16.00
150-160 Vis. at 210° E	16.00	16.00	16.00
120 Vis. at 210° D:			
0 to 10 pour test	16.50	16.50	16.50
10 to 25 pour test	16.00	16.00	16.00
25 to 40 pour test	15.50	15.50	15.50
600 Stm. Rfd. Dark Green	5.50 – 6.50	5.50 – 6.50	5.50 – 6.50
600 Stm. Rfd. Olive Green	6.50 – 8.00	6.50 – 8.00	6.50 – 8.00
631 Steam Refined	*10.00	*10.00	*10.00
Black oil	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375

*Only one refiner quoting.

Chicago (F.o.b. Chicago district refineries) (Viscosity at 210°)

Unfiltered Steam Refined:			
140	9.00	9.00	9.00
160	10.00	10.00	10.00
200	11.00	11.00	11.00
Bright stocks, 160 vis. at 210 No. 8 color:			
0 to 10 pour point	18.75	18.75	18.75
15 to 25 pour point	18.25	18.25	18.25
30 to 40 pour point	17.75	17.75	17.75
E filtered Cyl. Stock	14.00	14.00	14.00

(*Continued on page 68*)

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Call the Gulf "S. O. S." man!

GULF REFINING COMPANY
2509 Gulf Building, Pittsburgh, Pa.

Please have the Gulf S. O. S. man call. Without obligation, I would like to talk to him on

_____
(*Fill in date*)

*Name*_____

*Address*_____

*City*_____ *State*_____

NPN 12-11-35

REFINERY TANK CAR MARKETS

CONTINUED FROM PAGE 66

Cylinder Stocks (cont'd)

Western Penna. (A.S.T.M. tests; quotations and/or sales prices to car unloaders)

	Dec. 9	Dec. 2	Nov. 25
600 stm. rfd. filterable	9.50 –10.00	9.50 –10.00	9.50 –10.00
650 steam refined	11.00 –11.50	11.00 –11.50	11.00 –11.50
600 flash	12.00 –12.50	12.00 –12.50	12.00 –12.50
630 flash	17.00 –17.50	17.00 –17.50	17.00 –17.50
600 Warren E	13.00 –13.50	13.00 –13.50	13.00 –13.50
Bright stock, 145-155, vis. at 210°, 540-550 flash, No. 8 color:			
10 pour test	22.00 –22.50	22.00 –22.50	22.00 –22.50
15 pour test	21.00 –21.50	21.00 –21.50	21.00 –21.50
20 pour test	20.00 –20.50	20.00 –20.50	20.00 –20.50
25 pour test	19.00 –19.50	19.00 –19.50	19.00 –19.50

Petrolatums

Western Penna. (Per pound, in barrels, carload lots, f.o.b. Penna. refinery. In tank cars, 0.5c per pound less. Quotations are from majority of petrolatum makers).

	Dec. 9	Dec. 2	Nov. 25
Snow White	6.625	6.625	6.625
Lily White	5.625	5.625	5.625
Cream White	4.625	4.625	4.625
Light Amber	2.75	2.75	2.75
Amber	2.50	2.50	2.50
Red	2.00 – 2.125	2.00 – 2.125	2.00 – 2.125

Wax

Western Penna. (Per pound, f.o.b. New York)

	Dec. 9	Dec. 2	Nov. 25
122-124 wh. crude scale, A.m.p.	2.30 – 2.35	2.30 – 2.35	2.30 – 2.35
124-126 wh. crude scale, A.m.p.	2.35 – 2.40	2.35 – 2.40	2.35 – 2.40

Oklahoma (Per pound in barrels; in a few instances, per pound in burlap bags; f.o.b. Oklahoma refineries)

124-126 wh. crude scale. A.m.p.	2.375– 2.50	2.375– 2.50	2.375

Chicago (F.o.b. Chicago district refineries, in cents per pound, in bags carload lots. Melting points A.S.T.M. method; add 3° F. to convert into A.m.p.)

Fully refined:			
122-124	4.40 – 4.50	4.40 – 4.50	4.40 – 4.50
125-127	4.65 – 4.75	4.65 – 4.75	4.65 – 4.75
127-129	4.80 – 4.90	4.80 – 4.90	4.80 – 4.90
130-132	*5.20 – 5.30	*5.20 – 5.30	*5.20 – 5.30
132-134	*5.45 – 5.55	*5.45 – 5.55	*5.45 – 5.55
135-137	*6.20 – 6.30	*6.20 – 6.30	*6.20 – 6.30

*Same prices quoted in bags or slabs loose.

MID-WESTERN TANK CAR MARKETS

Following prices are in cents per gallon, except fuel oil in barrels of 42 U. S. gallons, in tank car lots, representing majority of sales of products made by Chicago sellers, from legally produced crude to jobbers on Group 3 freight basis, although shipments may originate in other South-western or Mid-western refining districts. Prices do not include state or federal taxes.

Gasoline

U. S. Motor gasoline:	Dec. 9	Dec. 2	Nov. 25
62 octane and below (3rd grade)	4.625– 4.75	4.625– 4.75	4.625– 4.75
63-70 octane (regular)	5.50 – 5.75	5.50 – 5.75	5.50 – 5.75
71 octane and above			
60-62, 400 e.p.	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
64-66, 375 e.p.	4.875– 5.00	4.875– 5.00	4.875– 5.00
68-70, 350-360 e.p.	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125

Kerosine

41-43 w.w.	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375
42-44 w.w.	3.375– 3.50	3.375– 3.50	3.375– 3.50

Fuel *and* Gas Oils

Domestic:			
No. 1 prime white	3.25	3.125– 3.25	3.125– 3.25
No. 1 straw	3.125– 3.25	3.00 – 3.25	3.00 – 3.25

*Formerly Chicago Tank Car Markets.

	Dec. 9	Dec. 2	Nov. 25
No. 2 straw	3.00 – 3.125	3.00 – 3.125	3.00 – 3.125
No. 2 dark	3.00	2.875– 3.00	2.875
No. 3	2.875	2.75 – 2.875	2.75 – 2.875
No. 4 (per bbl.)	$0.85 –$0.90	$0.85 –$0.90	$0.85 –$0.90
No. 5 (per bbl.)	$0.625–$0.65	$0.625–$0.65	$0.625–$0.65
Industrial:			
No. 4, (per bbl.)	$0.75 –$0.80	$0.75 –$0.80	$0.75 –$0.80
No. 5, (per bbl.)	$0.575–$0.60	$0.575–$0.60	$0.575–$0.60
No. 6, (per bbl.)	$0.45 –$0.50	$0.45 –$0.50	$0.45 –$0.50
U.G.I. gas oil	2.25 – 2.375	2.25 – 2.375	2.25 – 2.375

Naphtha *and* Solvent

Stoddard solvent	6.375	6.375	6.375
V. M. & P. naphtha	6.875	6.875	6.875
Cleaners' naphtha	6.875	6.875	6.875
Mineral spirits	5.875	5.875	5.875
Rubber solvent	6.875	6.875	6.875
Lacquer diluent	7.875	7.875	7.875

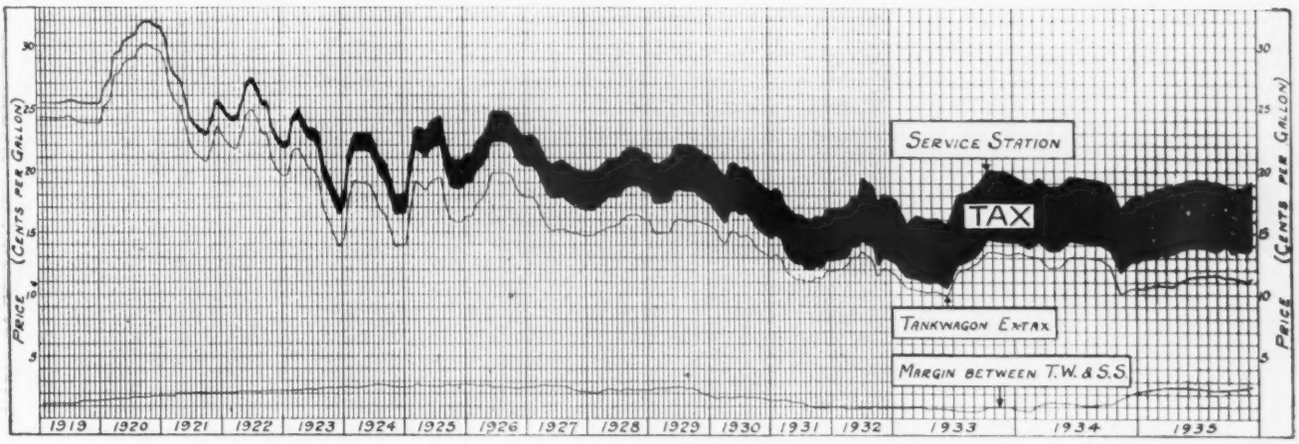
DAILY GASOLINE PRICES

Daily range of gasoline prices (cents per gallon) in tank cars, as reported in PLATT'S OILGRAM, (Week Ended Dec. 6, 1935)

	Dec. 2	Dec. 3	Dec. 4	Dec. 5	Dec. 6
U. S. Motor, 62 octane & below (3rd grade):					
East Texas	4.625	4.625	4.625	4.625	4.625
*North Texas	4.625– 4.75	4.625– 4.75	4.75	4.75	4.75
West Texas	4.75	4.75	4.75	4.75	4.75
Oklahoma	4.625– 4.75	4.625– 4.75	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
Mid-Western (Group 3 basis)	4.625– 4.75	4.625– 4.75	4.625– 4.75	4.625– 4.75	4.625– 4.75
U. S. Motor, 63-70 octane (regular):					
East Texas					
*North Texas	5.625	5.625	5.625	5.625	5.625
West Texas	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.625– 5.75
Oklahoma	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.625– 5.75	5.625– 5.75
Mid-Western (Group 3 basis)	5.50 – 5.75	5.50 – 5.75	5.50 – 5.75	5.50 – 5.75	5.50 – 5.75
Motor Gasoline, 60-64 octane					
New York harbor	6.25	6.25	6.25	6.25	6.25
Philadelphia district	6.25	6.25	6.25	6.25	6.25
Baltimore district	6.25	6.25	6.25	6.25	6.25
Motor Gasoline, 65 octane & above					
New York harbor	6.50	6.50	6.50	6.50	6.50
Philadelphia district	6.50	6.50	6.50	6.50	6.50
Baltimore district	6.50	6.50	6.50	6.50	6.50
U. S. Motor Gasoline					
Bradford-Warren (Western Penna.)	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375
Other districts (Western Penna.)	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375	5.25 – 5.375
Motor Gasoline, Minimum 60 octane					
Bradford-Warren (Western Penna.)	6.75 – 6.875	6.75 – 6.875	6.75 – 6.875	6.75 – 6.875	6.75 – 6.875
Other districts (Western Penna.)	6.75 – 6.875	6.75 – 6.875	6.75 – 6.875	6.75 – 6.875	6.75 – 6.875
Motor Gasoline, Minimum 65 octane					
Bradford-Warren (Western Penna.)	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125
Other districts (Western Penna.)	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125

*For shipment to Texas and New Mexico destinations; Group 3 prices are quoted on northern shipments.

Trend of Gasoline Prices *and* Gasoline Taxes, at 50 Representative Cities



TANK WAGON, SERVICE STATION MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect Dec. 9, 1935, as posted by principal marketing companies at their headquarters offices, but subject to later corrections.

S. O. New Jersey

***Esso*lene**

	Consumer Tank Car	Dealer T.W.	Taxes	Posted S.S.	Kerosine T.W.
Atlantic City, N. J.	7.3	9.8	4	17.3	9
Newark, N. J.	7.3	9.8	4	17.3	7.5
Annapolis, Md.	7.6	10.1	5	18.6	10
Baltimore, Md.	7	9.5	5	18	7.5
Cumberland, Md.	8.6	11.1	5	19.6	12.7
Washington, D. C.	7	9.5	3	16	9
Danville, Va.	8.4	10.9	6	20.4	12.9
Norfolk, Va.	6.9	9.4	6	18.9	11.3
Petersburg, Va.	7.6	10.1	6	19.6	11.7
Richmond, Va.	7.6	7.8	6	17.3	11.7
Roanoke, Va.	8.6	11.1	6	20.6	12.9
Charleston, W. Va.	7.8	10.3	5	18.8	12.6
Parkersburg, W. Va.	7.1	9.6	5	18.1	11.2
Wheeling, W. Va.	8.1	9.5	5	18	12.2
Charlotte, N. C.	8.7	11.2	7	21.7	12.9
Hickory, N. C.	9	11.5	7	22	13.1
Mt. Airy, N. C.	9	11.5	7	22	13.2
Raleigh, N. C.	8.4	10.9	7	21.4	12.7
Salisbury, N. C.	8.8	11.3	7	21.8	13
Charleston, S. C.	7	9.5	7	20	11.3
Columbia, S. C.	8.3	10.8	7	21.3	12.6
Spartanburg, S. C.	8.7	11.2	7	21.7	12.9

Price basis to undivided dealers: Dealer t.w. price less 0.5c per gal.

Price basis to commercial consumers: Beginning Feb. 11, 1935, all new commercial consumers will be signed on following differentials over tank car price, on yearly purchases: up to 35,999 gals., 2.5c over t.c.; 36,000 to 119,999 gals., 2c; 120,000 to 239,999 gals., 1.5c; 240,000 to 479,999 gals., 1c; and over 480,000 gals., 0.5c.

Above prices apply only when deliveries are made in lots of 50 or 100 gals. at one time, depending on code region in which deliveries are effected.

If deliveries are made in less than these minimum quantities, s.s. price at time and place of delivery applies.

Non-contract customers will be billed at 2.5c over tank car price at time and place of delivery.

Kerosine Discount: 1c off t.w. price for 25 gals. or more, under contract thru territory (Baltimore City contract not necessary) except no discount in state of New Jersey.

Socony-Vacuum Oil Co., Inc.

(S. O. New York Division)

Socony Mobilgas

	"Split" Dealer T.W.	Taxes	Total "Split" Dealer T.W.	S.S.	Kerosine T.W.
Metropolitan N. Y. City: Boroughs of Manhattan, Bronx and Queens	10.25	*5	15.25	*19.5	7.25
Borough of Richmond (Staten Is.)	9.75	*5	14.75	*18.5	7.25
Borough of Brooklyn	10	*5	15	*19	7.25
Albany, N. Y.	9.5	5	14.5	18	7.75
Binghamton, N. Y.	10.5	5	15.5	19	8.75
Buffalo, N. Y.	7	5	12	14	8
Jamestown, N. Y.	10	5	15	18.5	8
Plattsburg, N. Y.	10.5	5	15.5	19	8.75
Rochester, N. Y.	8	5	13	16	8
Syracuse, N. Y.	10	5	15	18.5	8.75
Danbury, Conn.	9.75	4	13.75	17.5	7.75
Hartford, Conn.	9.5	4	13.5	17	7
New Haven, Conn.	9.5	4	13.5	17	7.25
Bangor, Me.	10.5	5	15.5	19	8.75
Portland, Me.	10	5	15	18.5	7.75
Boston, Mass.	9.5	4	13.5	17	7
Concord, N. H.	10.5	5	15.5	19	8.5
Lancaster, N. H.	12	5	17	20.5	9.5
Manchester, N. H.	10	5	15	18.5	8
Providence, R. I.	9.5	3	12.5	16	7.25
Burlington, Vt.	11.5	5	16.5	20	8.75
Rutland, Vt.	10.25	5	15.25	17.5	9.25

*Plus 2% city sales tax computed at time of each sale.

Discounts to dealers: thru territory, except New York City, off normal s.s. price, 4c to undivided dealers, and 3.5c to "split" dealers. In metropolitan New York City, to undivided dealers, 4.75c; in Brooklyn, 4.5c; in Staten Island, 4.25c. Split dealers receive 0.5c less margin than undivided dealers.

To commercial consumers: Effective Feb. 4, 1935, covering yearly purchases, billed at posted tank car price, plus these differentials: 2.5c for delivery of 1,200 to 36,000 gals., plus 2c, for 36,000 to 120,000 gals.; plus 1.5c for 120,000 to 240,000 gals.; plus 1c for 240,000 to 480,000 gals.; plus 0.5c for 480,000 gals. and over. Those buying less than 1,200 gals. yearly, get retail s.s. price.

Atlantic Refining

Atlantic White Flash Plus Gasoline

	Total T.W.	Taxes	Total T.W.	S.S.	Kerosine T.W.
Philadelphia, Pa.	11	5	16	18	9
Pittsburgh, Pa.	12	5	17	19	10
Allentown, Pa.	11.5	5	16.5	18.5	9
Erie, Pa.	11	5	16	18	8
Scranton, Pa.	11.5	5	16.5	18.5	10
Altoona, Pa.	12	5	17	19	9
Dover, Del.	11.5	5	16.5	18.5	10
Wilmington, Del.	11	5	16	16	9
Boston, Mass.	9.5	4	13.5	17	6.75
Springfield, Mass.	9.5	4	13.5	17	7.25
Worcester, Mass.	9.5	4	13.5	15	7.5
Fall River, Mass.	9.5	4	13.5	17	7
Providence, R. I.	9.5	3	12.5	16	7
Hartford, Conn.	9.5	4	13.5	17	6.75
New Haven, Conn.	9.5	4	13.5	7	7
Atlantic City, N. J.	9.8	4	13.8	17.3	9
Camden, N. J.	9.8	4	13.8	17.3	8
Trenton, N. J.	9.8	4	13.8	17.3	8
Annapolis, Md.	10.1	5	15.1	18.6	9.5
Baltimore, Md.	9.5	5	14.5	18	7.5
Hagerstown, Md.	8.3	5	13.3	14.8	10
Richmond, Va.	9.8	6	15.8	19.3	11.7
Wilmington, N. C.	9.6	7	16.6	20.1	11.4
Brunswick, Ga.	11.5	7	18.5	20.5	*14
Jacksonville, Fla.	11	8	19	21	10

Dealer discounts: on Atlantic White Flash Plus gasoline, thru territory, divided dealers, price equal to 3.5c off posted s.s. price; undivided dealers, price equal to 4c off posted s.s. price; authorized dealers contracts previous to Aug. 19, 1933, price equal to 3c less than posted s.s. price, plus 1c rental.

Price basis to commercial consumer: Effective Oct. 1, 1935, on yearly gasoline purchases based on posted tank car prices plus following amounts: 1,200 to 36,000 gals., 2.5c over t.c.; 36,000 to 120,000 gals., 2c; 120,000 to 240,000 gals., 1.5c; 240,000 to 480,000 gals., 1c; 480,000 gals. and over 0.5c.

S. O. Ohio

Sohio X-70 Gasoline

	Total T.W.	Taxes	Total T.W.	S.S.	Kerosine T.W.
Ohio statewide	12	5	17	19	*12.5
Belmont County	11.5	5	16.5	18	....
Jackson County	11	5	16	17	....

Renown (Third Grade Gasoline)

Ohio statewide	11.5	5	16.5	17.5	....
Counties off statewide gasoline schedule					
Jackson County	11	5	16	17	....
Butler, Champaign, Clark, Darke, Franklin, Greene, Hamilton, Miami, Montgomery, Preble and Summit	12	5	17	19	....

Statewide Prices to Resellers & Agents

(These prices are on sliding scale based on actual spread between S. O. Ohio statewide tank car price and posted local s.s. price).

Including taxes	†Undivided Accounts	Divided Accounts	**Authorized Agents
Sohio X-70	15.5	16	16
Renown (3rd grade)	15	15.5	15.5

Note: On single deliveries of motor gasolines under 25 gallons, to t.w. consumers, s.s. price applies.

Sales tax: Ohio's 3% sales tax, effective Jan. 27, 1935, is added "where assessable, to regular posted prices", S. O. Ohio says.

*Kerosine prices include 1c state tax. Kerosine t.w. price in Hardin and Wyandot counties is 11.5c.
†Excluding authorized agents.
**Excluding 0.5c rental.

Discounts to contract tank wagon consumers only: on all motor gasolines, effective Dec. 1, 1934, off posted t.w. price, on deliveries per month: 1,000 to 9,999 gals., 1.5c per gal. 10,000 gals. and over, 2.5c. Under 1,000 gals., full t.w. price. Single deliveries of less than 25 gals., full s.s. price. Additional yearly discounts (less amount paid or credited to buyer on monthly purchases), off t.w. price: 12,000 to 119,999 gals., 1.5c; 120,000 gals. or over, 2.5c.

Discounts on kerosine: to dealers and commercial consumers, 3c per gal. off t.w. price, any quantity.

S. O. Kentucky

Crown Gasoline

	Total T.W.	Taxes	Total T.W.	S.S.	Kerosine T.W.
Lexington, Ky.	13.5	6	19.5	21.5	11
Louisville, Ky.	12.5	6	18.5	20.5	10
Paducah, Ky.	12.5	6	18.5	20.5	10
Covington, Ky.	12	6	18	20	10.5

TANK WAGON, SERVICE STATION MARKETS

column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect Dec. 9, 1935, as posted by principal marketing companies at their headquarters offices, but subject to later corrections.

S. O. Kentucky (Cont'd)

	T.W.	Taxes	Total T.W.	S.S.	Kerosine T.W.
Jackson, Miss.	12.5	7	19.5	21.5	*11
Vicksburg, Miss.	12	7	19	20.5	*12
Birmingham, Ala.	13.5	*8	21.5	23.5	12
Mobile, Ala.	12.5	*8	20.5	22.5	10
Montgomery, Ala.	13	*9	22	24	*15.5
Macon, Ga.	13.5	7	20.5	22.5	*13
Atlanta, Ga.	14	7	21	23	*12
Augusta, Ga.	13.5	7	20.5	22.5	*12
Savannah, Ga.	11.5	7	18.5	20.5	*13
Jacksonville, Fla.	11	8	19	21	10
Miami, Fla.	11	8	19	21	13.5
Tampa, Fla.	11	8	19	21	10
Pensacola, Fla.	10.25	*9	19.75	21	11.5
Kyso (Third Grade)					
Lexington, Ky.	12.5	6	18.5	20	....
Louisville, Ky.	10.5	6	16.5	17.5	....
Paducah, Ky.	10	6	16	16.5	....
Covington, Ky.	10.5	6	16.5	18	....
Jackson, Miss.	11.5	7	18.5	20	....
Vicksburg, Miss.	8	7	15	15.5	....
Birmingham, Ala.	11.75	*8	19.75	21	....
Mobile, Ala.	10.25	*8	18.25	19	....
Montgomery, Ala.	10.5	*9	19.5	20	....
Atlanta, Ga.	10.5	7	17.5	18	....
Augusta, Ga.	10	7	17	17.5	....
Macon, Ga.	10	7	17	17.5	....
Pensacola, Fla.	7.5	*9	16.5	17	....

Dealer Discount: off posted s.s. price, on Crown and Crown Ethyl gasolines to "undivided" dealers 4c; on Kyso, 3c. To "divided" dealers: Crown and Ethyl, 3.5c, and Kyso, 2.5c, all undivided on or about Jan. 1, 1934.

Discounts to tank wagon consumers: all single deliveries of 25 gals. or less, get posted s.s. price: all single deliveries of 25 gals. or more, to be billed at posted t.w. price, plus following discounts, off posted t.w. price: Ethyl and Crown gasoline, 25 to 2,999 gals. monthly, 1.5c; Kyso, 1c; 3,000 to 24,999 gals., Ethyl and Crown, 2c; Kyso, 1.5c; 25,000 gals. or more, Ethyl and Crown, 3c; and Kyso, 2.5c.

**Taxes*: in the tax column is included these city and county gasoline taxes at the following points: Birmingham, 1c city; Mobile, 1c city; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia and Mississippi kerosine prices include 1c state tax Montgomery kerosine price includes 1c city tax.

S. O. Indiana

Standard Red Crown Gasoline

Chicago, Ill.	10	4	14	16	9.8
Decatur, Ill.	11.5	4	15.5	17.5	9.8
Joliet, Ill.	11.5	4	15.5	16	9.8
Peoria, Ill.	11.5	4	15.5	15.5	9.8
Quincy, Ill.	11.3	4	15.3	17.3	9.6
Indianapolis, Ind.	12.4	*5	17.4	19.4	‡14.5
Evansville, Ind.	12.2	*5	17.2	19.2	‡14.3
South Bend, Ind.	12.6	*5	17.6	19.6	‡12
Detroit, Mich.	9.5	4	13.5	15.5	9.3
Grand Rapids, Mich.	11.6	4	15.6	15.6	10.5
Saginaw, Mich.	12.8	4	16.8	18.8	9.3
Green Bay, Wisc.	12.2	5	17.2	19.2	10.5
Milwaukee, Wisc.	10.3	5	15.3	16.8	10.1
La Crosse, Wisc.	11.9	5	16.9	18.9	10.2
Minneapolis, Minn.	12.9	4	16.9	17.9	10.2
Duluth, Minn.	12.3	4	16.3	18.3	10.6
Mankato, Minn.	11.9	4	15.9	17.9	10.2
Des Moines, Iowa.	11.3	4	15.3**	18.3	9.6
Sioux City, Iowa.	11.5	4	15.5**	17.5	9.8
Davenport, Iowa.	11.5	4	15.5**	17.5	9.8
Mason City, Iowa.	11.7	4	15.7**	17.7	10
St. Louis, Mo.	11.2	†4	15.2	17.2	9.5
Kansas City, Mo.	10.9	†4	14.9	16.9	9.2
St. Joseph, Mo.	10.9	†4	14.9	16.9	9.2
Fargo, N. D.	12.9	4	16.9	18.9	11.2
Minot, N. Dak.	14.1	4	18.1	20.1	12.4
Huron, S. Dak.	12.4	*5	17.4	19.4	10.7
Wichita, Kans.	10.4	4	14.4	16.4	6.3

Note: Kerosine s.s. prices are generally 3c above normal t.w. price.

Stanolind Gasoline (Third Grade)

Stanolind normal prices are 1c under normal Red Crown prices, thru territory. Among subnormal points are the following:

Decatur, Ill.	10.5	4	14.5	16	....
Peoria, Ill.	10.5	4	14.5	14.3	....
Evansville, Ind.	11.2	*5	16.2	17.7	....

S. O. Indiana (Cont'd)

Stanolind Gasoline (Third Grade)

	T.W.	Taxes	Total T.W.	S.S.	Kerosine T.W.
Indianapolis, Ind.	11.4	*5	16.4	18.1	....
Des Moines, Iowa.	8.6	4	12.6**	17.3	....
Detroit, Mich.	8	4	12	14	....
Grand Rapids, Mich.	10.6	4	14.6	15.6	....
Milwaukee, Wis.	9.3	5	14.3	15.8	....
Huron, S. D.	11.4	*5	16.4	18.4	....
Wichita, Kans.	7.5	4	11.5	13.9	....
Minneapolis, Minn.	11.9	4	15.9	14.9	....

†St. Louis, Kansas City and St. Josepn prices include 1c city tax. ‡Includes 4c state tax.

*South Dakota gasoline and kerosine prices include 0.1c for sales tax. Indiana t.w. and s.s. gasoline prices include 0.2c for chain store tax.

**Service station prices for gasoline at Iowa points represent the opinion of National Petroleum News as to prices prevailing at the majority of stations.

Discounts to dealers: Effective Dec. 1, 1934, thru territory, except Michigan effective Apr. 1, 1935, and except Chicago division and Iowa, maximum discounts to controlled and uncontrolled undivided gasoline accounts, off s.s. price at normal points: Ethyl and Red Crown gasoline, 3.5c; Stanolind 2.5c; in Chicago, effective July 1, 1935, Ethyl and Red Crown, 4c; Stanolind, 3c. Divided gasoline accounts thru territory, get 0.5c less per gallon. In case of lease and agency and AAA accounts, the above discounts include the 0.5c per gal. rental allowance. In Iowa, normal dealer prices are 1.5c below normal t.w. price for first and second grade gasolines, and 0.5c under normal t.w. for third grade.

Discounts to commercial consumers: effective Jan. 1, 1935, thru territory, except Michigan effective Feb. 1, on purchases per month, discount off t.w. price; all gasolines, 25 to 1,000 gals., at t.w. price; 1,000 gals. or more, 1.5c off t.w. on Ethyl and Red Crown, and 0.5c on Stanolind. Purchases of less than 25 gals. get regular s.s. price.

S. O. Nebraska

Standard Red Crown Gasoline

Omaha, Neb.	11.9	6	17.9	19.9	10.1
McCook, Neb.	12.6	6	18.6	20.6	10.8
Norfolk, Neb.	12.3	6	18.3	20.3	10.5
North Platte, Neb.	12.7	6	18.7	20.7	10.9
Scottsbluff, Neb.	13.4	6	19.4	21.4	11.6
Reliance Gasoline (Third Grade)					
Omaha, Neb.	10.5	6	16.5	16.5	....
McCook, Neb.	11.1	6	17.1	18.9	....
Norfolk, Neb.	11.3	6	17.3	19.3	....
North Platte, Neb.	11.7	6	17.7	19.7	....
Scottsbluff, Neb.	12.4	6	18.4	20.4	....

Discount to dealers: where service station gasoline prices are normal, resellers' allowance off service station prices are (*Maximum* over-all, including rent) as follows: Reliance, 2½c; Standard Red Crown, and Red Crown Ethyl, 3½c. Where service station gasoline prices are below normal, resellers' allowances are reduced one-half of the amount below normal, down to the following (*Minimum* over-all including rent): Reliance, 2c, Standard Red Crown and Red Crown Ethyl 3c.

Discounts to consumers: for tank wagon deliveries covered only by Standard Commercial Consumer Contract, effective January 1, 1935.

S. O. Louisiana

Essolene

	Consumer Tank Car	Dealer T.W.	Tax-es	Posted S.S.	Kerosine T.W.
Little Rock, Ark.	7.5	10	7.5	21	11.5
Alexandria, La.	7.5	10	*8	21.5	*10.5
Baton Rouge, La.	7.5	10	*7	20.5	*11.5
New Orleans, La.	7.5	10	*8	21.5	*12
Lake Charles, La.	8	10.5	*8	22	11
Shreveport, La.	7	9.5	*7	20	*9
Lafayette, La.	8	10.5	*8	22	12.5
Bristol, Tenn.	9.1	10.35	8	21.1	14.5
Chattanooga, Tenn.	9.5	12	8	23.5	11.5
Knoxville, Tenn.	10	12.5	8	24	14
Memphis, Tenn.	8	10.5	8	22	9.5
Nashville, Tenn.	9	11.5	8	23	10

*Baton Rouge and Shreveport gasoline tax includes 5c state tax, 1c federal tax, and 1c parish tax. Alexandria, Lake Charles, Lafayette and New Orleans, 2c parish tax. Louisiana kerosine prices include 1c state tax; New Orleans kerosine includes also 1c parish tax.

Price basis to dealers: Undivided dealers get dealer price, less 0.5c.

Price basis to commercial consumers: Effective Feb. 11, 1935, commercial consumers not under contract will be billed at 2.5c per gal. above posted bulk plant tank car price at time and place of delivery in lots of 50 gals. or more at one time. Contract customers will be billed at following differentials over tank car price, on yearly purchases: up to 35,999 gals., 2.5c over tank car price; 36,000 to 119,999 gals., 2c over; 120,000 to 239,999 gals. 1.5c; 240,000 to 479,999 gals., 1c; 480,000 gals. and over, 0.5c.

On single deliveries to all classes of commercial consumers, of less than 50 gals., s.s. price at time and place of delivery applies.

Magnolia Petroleum

Mobilgas

	T.W.	Taxes	Total T.W.	S.S.	Kerosine T.W.
Muskogee, Okla.	11	5	16	18	7
Oklahoma City.	11	5	16	18	8
Tulsa, Okla.	11	5	16	18	8
Fort Smith, Ark.	10	†5	15	18.5	8
Little Rock, Ark.	10	7.5	17.5	21	9.5
Texarkana, Ark.	11	*5	16	18	7
Dallas, Tex.	10	5	15	17	7
Ft. Worth, Tex.	10	5	15	17	7
Houston, Tex.	11	5	16	18	8
San Antonio, Tex.	11	5	16	18	8
El Paso, Tex.	12	5	17	19	10
Santa Fe, N. M.	13.5	**7	20.5	22.5	12
Roswell, N. M.	12.5	††6.5	19	21	10
Metro Gasoline (Third Grade)					
Muskogee, Okla.	9	5	14	16	....
Oklahoma City.	9	5	14	16	....
Tulsa, Okla.	8	5	13	15	....
Fort Smith, Ark.	10	5	15	17	....
Little Rock, Ark.	10	7.5	17.5	19	....
Texarkana, Ark.	8	5	13	15	....
Dallas, Tex.	7	5	12	14	....
Ft. Worth, Tex.	7	5	12	14	....
Houston, Tex.	9	5	14	16	....
San Antonio, Tex.	9	5	14	16	....
El Paso, Tex.	9	5	14	16	....
Santa Fe, N. M.	11.5	**7	18.5	20.5	....
Roswell, N. M.	10.5	††6.5	17	19	....

*In Texarkana, 4c Texas tax applies; outside Texarkana, 6.5c Arkansas tax applies.

†In Fort Smith, 4c Oklahoma tax applies outside Fort Smith, 6.5c Arkansas tax applies.

**Includes 1c city tax.

††Includes 0.5c city tax.

Note: *Price basis to dealers* off s.s. price in t.w., bulk or bbl. deliveries, on Mobilgas and Ethyl, normally: to 100% dealers, 4c; to divided dealers, 3.5c. On Metro gasoline in Texas, Oklahoma and New Mexico: to 100% dealers, 3c; to divided dealers 2.5c. On Metro, in Arkansas and Louisiana: to 100% dealers, 3.25c; to divided dealers 2.75c.

Price basis to consumers: thru Texas, Oklahoma and New Mexico, except federal and state governments and political sub-divisions thereof; and also drainage, navigation and reclamation districts and road contractor accounts in Texas (in Texas all foregoing accounts receive same graduated discounts allowed 100% dealers, on all grades of gasoline, which see in above paragraph). All grades of gasoline invoiced at consumer's t.w. price, which normally is 2c less than s.s. price, less following contract quantity discounts at end of month, on monthly purchases: 3,001 to 10,000 gals., Mobilgas and Ethyl, 1c, Metro, 0.5c; 10,001 gals. and over, Mobilgas and Ethyl, 2c, Metro, 1c; 25 to 3,000 gals., no discount. Thru Arkansas and Louisiana, all grades gasoline invoiced at consumer's t.w. price, which on Mobilgas and Ethyl, normally is 3.5c less than s.s. price, less following contract quantity discounts at end of month, on all three grades, on monthly purchases: 3,001 to 10,000 gals., 0.5c; 10,001 to 20,000 gals., 1c; 20,001 to 40,000 gals., 1.5c; and 40,001 gals. and over, 2c. Metro invoiced at same price as Mobilgas.

Continental Oil

Conoco Bronze Gasoline

Denver, Colo.	13	5	18	20	11
Pueblo, Colo.	13	5	18	20	13
Grand Junc., Colo.	15.5	5	20.5	22.5	15

Above prices include these inspection fees on both gasoline and kerosine, per gallon, figured on basis of 50 gallons per barrel:

Alabama, 1/40c on gasoline, 1/2c on kerosine; Arkansas, 1/5c per gal. in a single barrel, 1/20c per gal. in bulk; Florida, 1/8c; Illinois, 3/100c; Indiana, 1/2c per gal. in a single barrel; 3/10c per gal. in lots of 2 to 10 bbls., 1/5c for 10 to 50 bbls., 2/25c for over 50 bbls.; Kansas, 1/50c, (3/50c can be charged to meet inspection department expenses); Louisiana, 1/32c; Minnesota, 1/25c; Missouri, 3/100c; Nebraska, 3/100c; Nevada, gasoline, 1/20c; North Carolina, 1/4c; North Dakota, 1/20c; Oklahoma, 2/25c per gal. in lots of more than 50 bbls., 1/5c in lots less than 50 bbls.; South Carolina, 1/8c; South Dakota, 1/10c; Tennessee 2/5c; and Wisconsin, 1/25c.

Kerosine inspection fee only: Iowa, 2/25c; Michigan, 4/5c per gal. for first 2 bbls.; 3/5c for next 3; 2/5c for next 5; 3/10c for next 15, and 1/5c per gal. in lots over 25 bbls.

TANK WAGON, SERVICE STATION MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect Dec. 9, 1935, as posted by principal marketing companies at their headquarters offices, but subject to later corrections.

Continental Oil (Cont'd)

Conoco Bronze Gasoline

	T.W.	Tax	Total T.W.	S.S.	Kerosine T.W.
Casper, Wyo.	13.5	5	18.5	20.5	11.5
Cheyenne, Wyo.	13.5	5	18.5	20.5	13
Billings, Mont.	13.5	6	19.5	21.5	16.5
Butte, Mont.	15	6	21	23	17.5
Great Falls, Mont.	14.5	6	20.5	22.5	17.5
Helena, Mont.	15.5	6	21.5	23.5	17.5
Salt Lake City, Utah	11	5	16	18	16
Boise, Ida.	16.5	6	22.5	24.5	18
Twin Falls, Ida.	17	6	23	25	18
Albuquerque, N. M.	13.5	†6.5	20	22	13

Demand (Third Grade)

Denver, Colo.	11	5	16	18	....
Cheyenne, Wyo.	11.5	5	16.5	18.5	....
Helena, Mont.	13.5	6	19.5	21.5	....
Salt Lake City, Utah	8	5	13	15	....
Boise, Ida.	14.5	6	20.5	22.5	....
Albuquerque, N. M.	11.5	†6.5	18	20	....

†Includes city tax of 0.5c.

Discounts: effective March 1, 1934, on gasolines, thru territory, off s.s. price: to "undivided" dealers: Ethyl and Conoco Bronze, 4c; Demand, 3c; to "divided" dealers: Ethyl and Conoco Bronze, 3.5c; Demand, 2.5c.

S. O. California

Standard Gasoline

San Francisco, Cal.	10	4	14	16	10
Los Angeles, Cal.	9.5	4	13.5	15.5	10.5
Fresno, Cal.	10.5	4	14.5	16.5	9
Phoenix, Ariz.	12	6	18	20	†16
Reno, Nev.	12	5	17	19	13
Portland, Ore.	10.5	6	16.5	18.5	13.5
Seattle, Wash.	10.5	6	16.5	18.5	13.5
Spokane, Wash.	13.5	6	19.5	21.5	16.5
Tacoma, Wash.	10.5	6	16.5	18.5	13.5

Flight Gasoline (Third Grade)

San Francisco, Cal.	8	4	12	14	....
Los Angeles, Cal.	7.5	4	11.5	13.5	....
Fresno, Cal.	8.5	4	12.5	14.5	....
Reno, Nev.	10	5	15	17	....
Phoenix, Ariz.	10	6	16	18	....
Portland, Ore.	9	6	15	17	....
Seattle, Wash.	9	6	15	17	....
Spokane, Wash.	12	6	18	20	....
Tacoma, Wash.	9	6	15	17	....

†Includes 5c state tax.

Discounts: on gasoline: on Stanavo Aviation, Standard Ethyl, and Standard gasolines, to 100% dealers, 2c below t.w. price; on Flight, 1c per gal. below t.w. To "split" dealers, all brands gasoline 1c below t.w.

Effective September 24, 1935, to commercial consumers, off t.w.: advance quantity discount from above prices extended at time of delivery, on Stanavo Aviation, Standard Ethyl and Standard gasolines, 2c per gal.; Flight, 1c.

On kerosine: tank car delivery, 3.5c off t.w. price to all classes of trade; transport truck and trailer deliveries, 3.5c below t.w. to resellers; plant deliveries to jobbers, 3c below t.w.

Canada

Prices of Imperial Oil Ltd.

Per Imperial Gallon, which is 1.2 U. S. Gallons

Imperial Three Star Gasoline

	T.W.	Tax	Total T.W.	S.S.	Kerosine T.W.
Hamilton, Ont.	15	6	21	23.5	16.5
Toronto, Ont.	15	6	21	23.5	16.5
Brandon, Man.	23.3	7	30.3	33.3	21.8
Winnipeg, Man.	21.7	7	28.7	31.7	20.2
Regina, Sask.	23	7	30	33	21.5
Saskatoon, Sask.	25.8	7	32.8	35.8	24.3
Edmonton, Alta.	25.2	7	32.2	35.2	23.7
Calgary, Alta.	22.5	7	29.5	32.5	21
Vancouver, B. C.	19	7	26	29	24
Montreal, Que.	14.5	6	20.5	23	17
St. John, N. B.	18	8	26	30	19.5
Halifax, N. S.	18	8	26	30	19.5

Discount to dealers and A.R.D. Accounts:

On gasoline, effective May 14, 1934: in Maritime Provinces, all dealers get 4c off s.s. price; in all other provinces, open dealers get 3c off s.s. price and 1c additional to 100% accounts, except Montreal City, Hamilton and Toronto, where open dealers get 2.5c off s.s. price with 1c additional to 100% accounts

Aviation Gasoline

Following are tank car and/or tank wagon prices of aviation gasoline in principal marketing territories (Stanavo aviation in all territories except Continental Oil and Magnolia Pet. Co.) Tax column includes 1c federal tax, and state tax; also municipal taxes as indicated in footnotes.

Effective Dec. 9, 1935

S. O. New Jersey

	Tank Car	T.W.
Bayonne, N. J.	9.75	12
Baltimore, Md.	9.75	12
Washington, D. C.	....	12.6
Richmond, Va.	....	13.5
Greensboro, N. C.	....	14.9
Raleigh, N. C.	....	14.6
Charleston, W. Va.	....	14.2

Colonial Beacon Oil Co.

	T.W.
Brooklyn, N. Y.	12.8
Buffalo, N. Y.	13.7
Boston, Mass.	13.5

S. O. Pennsylvania

Philadelphia, Pa.	14.1
Pittsburgh, Pa.	14.9

S. O. Louisiana

F.O.B. Tulsa	8.5

Prices in above four territories do not include state or federal taxes. They are for 73 octane grade aviation gasoline. An 80 octane product generally brings 0.5c premium and an 87 octane product, 1.5c premium over the 73 octane grade.

Note: S.s. prices in above four territories are generally 6c over t.w. prices. Following discounts apply for t.w. deliveries, on monthly purchases, off t.w. price: 3,000 to 10,000 gals., 0.5c; 10,000 to 20,000 gals., 1c; 20,000 to 40,000 gals., 1.5c; and over 40,000 gals., 2c. Consumer t.w. price is generally tank car price, plus freight, plus 2.5c per gal.

S. O. Ohio

	T.W.	Tax	Total T.W.
Thru Ohio: (To Commercial Consumers) Stanavo Ethyl Aviation (73 Octane):	15.5	5	20.5

Discounts: For delivery on contract to hangar operators and resellers: 2c below commercial consumer posted t.w. price.

S. O. Indiana

Chicago, Ill.	14.5	4	18.5
Indianapolis, Ind.	15.4	5	20.4
Detroit, Mich.	15.7	4	19.7
Milwaukee, Wisc.	14.8	5	19.8
Minneapolis, Minn.	14.9	4	18.9
St. Louis, Mo.	13.2	*4	17.2
Kansas City, Mo.	13.9	*4	17.9
Fargo, N. D.	15.9	4	19.9
Huron, S. D.	**15.4	5	20.4
Wichita, Kans.	13.4	4	17.4

*Includes 1c city tax.
**Includes 0.1c to cover sales tax.

Magnolia Petroleum

Dallas, Tex.	13	5	18

Humble Oil & Refining Co.

	Tank Car
Baytown, Tex. (exclusive of taxes)	8.2

Continental Oil Co.

	T.W.	Tax	Total T.W.
Denver, Colo.	16	5	21
Cheyenne, Wyo.	16.5	5	21.5
Helena, Mont.	19.5	6	25.5
Salt Lake City, Utah	18	5	23
Albuquerque, N. M.	16.5	*6.5	23

*Includes city tax of 0.5c.

S. O. California

Phoenix, Ariz.	14	6	20
Los Angeles, Cal.	11.5	4	15.5
San Francisco, Cal.	12	4	16
Reno, Nev.	13.5	5	18.5
Portland, Ore.	12.5	6	18.5
Seattle, Wash.	12.5	6	18.5
Spokane, Wash.	15.5	6	21.5

Note: For discounts, etc., see note under Standard and Flight gasoline above.

Naphtha

In Effect Dec. 9, 1935

(In Tank Wagon or Steel Barrels; in Cents per Gallon)

	Mineral Spirits	V.M.&P. Naphtha	Light Cleaner Naphtha	*Solvent
Altoona, Pa.	....	....	....	17
Baltimore (net)	11	....	....	11
Boston (net)	12	13.5	13.5	12
Bridgeport	....	....	....	13.5
Buffalo (net)	....	....	....	14
Chicago	15.7	16	15	15
Detroit	†17.4	†18.5	....	†18.5
Kansas City	13.4	14.4	14.4	13.4
Lancaster, Pa.	....	....	....	17
Milwaukee	18.3	†19.3	19.3	18.3
Minneapolis	†17.4	†18.4	†18.4	†16.9
Newark (net)	13	....	....	13
†New York	11	12	12	11
Philadelphia (net)	11.5	13	13	11.5
Providence (net)	11	11	....	11
Rochester (net)	‡12	....	....	‡12
St. Louis	13.7	14.7	14.7	13
Syracuse	....	....	....	14

Petroleum Spirits (Solvent)

In Tank Cars (F.o.b. refinery or seaboard terminal)

New York Harbor	9.5
Philadelphia district	9
Providence	9.5

Note: 2c off above t.w. prices to large buyers in some instances.

*In the East, prices apply on product generally known as Mineral Spirits; in the middlewest, prices apply on Stanosol (S. O. Indiana grade of Stoddard Solvent).

†At the following points, these taxes and/or discounts apply on the products specified: Detroit, first three products include 3c state tax, prices applying on 150 gals. or more, with prices 1c higher for less than 150 gals.; Milwaukee, V.M.&P. price includes 4c state tax; Minneapolis, first 3 products include 3c state tax; price for solvent for less than 100 gals. is 1c higher; at New York, prices on all four grades, 0.5c discount for 20,000 gals. or more yearly.

‡Purchases of at least 150 gallons.

Latest Changes

From Dec. 3 to Dec. 9 inclusive. Dates and amounts of changes shown. See table for full current prices. Changes are on gasoline unless kerosine is indicated.

S. O. New York—Mobilgas:

Syracuse, dealer, t.w. up 1c, s.s. up 1.5c, Dec. 5.

Kerosine:

In the general advance thru territory of 0.25c, Dec. 9, the following points remained unchanged: Borough of Richmond (Staten Island), Binghamton, Buffalo, Jamestown and Rochester.

Corrections

Notation of amount of change and dates not previously shown in table. Table in this issue is corrected to show these changes. Changes are on gasoline unless kerosine is indicated.

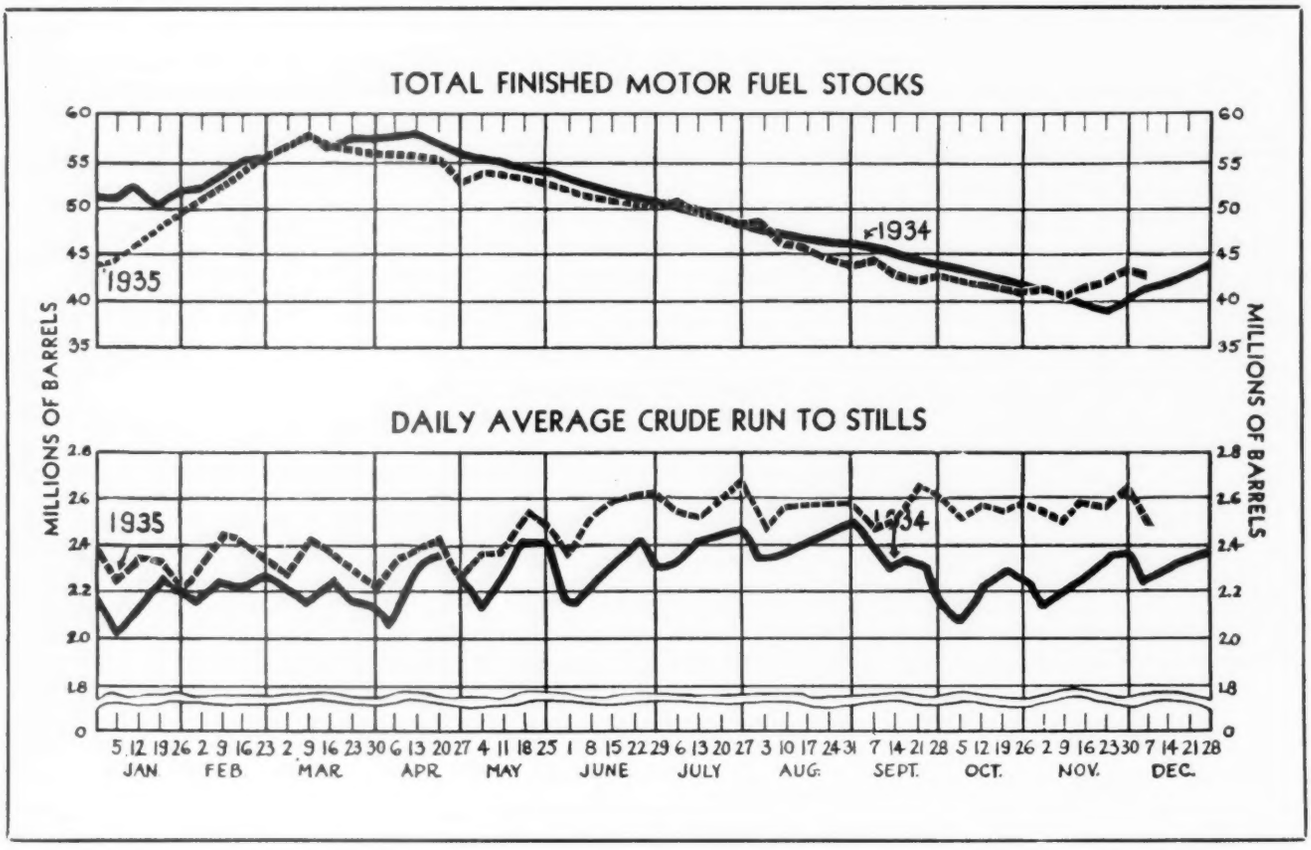
S. O. New Jersey—Essolene:

In the general 0.3c advance on Dec. 2, these points were unchanged: dealer t.w. and s.s., Richmond and Wheeling.

Baltimore, up 0.2c, Dec. 2, instead

(*Continued on page 73*)

U. S. Crude Runs and Gasoline Stocks as Reported Weekly by A. P. I.


TOTAL FINISHED MOTOR FUEL STOCKS
MILLIONS OF BARRELS
1935
1934
DAILY AVERAGE CRUDE RUN TO STILLS
MILLIONS OF BARRELS
1935
1934
5 12 19 26 2 9 16 23 2 9 16 23 30 6 13 20 27 4 11 18 25 1 8 15 22 29 6 13 20 27 3 10 17 24 31 7 14 21 28 5 12 19 26 2 9 16 23 30 7 14 21 28
JAN FEB MAR APR MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.

Refinery Crude Runs Decrease 153,000 Barrels

(By Teletype)
NEW YORK, Dec. 10

CRUDE runs to stills declined 153,000 barrels to 2,483,000 barrels the week ended Dec. 7. Refineries operated at 71.6 per cent capacity compared with 76 per cent the previous week, according to the American Petroleum Institute. All districts showed decreases in crude runs and operations except one which showed a slight gain and another which showed no change over the previous week. East Coast plants reduced runs 48,000 barrels daily, California plants, 30,000 barrels, Texas Gulf 21,000 and Appalachian 20,000 barrels.

Bulk stocks of motor fuel, which had gained 1,273,000 barrels the week ended Nov. 30, declined 691,000 barrels the past week, standing at 52,437,000 barrels on Dec. 7. Refinery stocks declined 1,111,000 barrels, to 24,832,000 barrels. In-transit and terminal stocks increased 607,000 barrels, to 17,854,000 barrels. Stocks of unfinished gasoline declined 62,000 barrels, standing at 5,296,000 barrels Dec. 7 and stocks of other motor fuels declined 125,000 barrels, to 4,455,000 barrels.

Total stocks of finished motor fuel amounted to 42,686,000 barrels on Dec. 7, a decrease of 504,000 barrels. The largest decrease was in Texas Gulf stocks which declined 727,000 barrels, to 4,211,000 barrels. Another large decline was one of 256,000 barrels in Oklahoma-Kansas-Missouri. Increases were reflected in California stocks, which gained 212,000 barrels. Inland Texas, which gained 141,000 barrels and smaller gains were reported in four other districts.

Current Refinery Operations

Districts	Per Cent Capacity Reporting	Daily Average Crude to Stills (Barrels) Week Ended		Per Cent of Reporting Capacity Operated Week Ended		Stocks (Thousands of Barrels) Total Finished Motor Fuel*		Total Finished Motor Fuel*	Gas & Fuel Oil	Gas & Fuel Oil	Cracked Gasoline Production % Total Capacity Reporting	Daily Av. Production (Barrels) Week Ended	
		Dec. 7	Nov. 30	Dec. 7	Nov. 30	Dec. 7	Nov. 30	Dec. 7	Nov. 30			Dec. 7	Nov. 30
East Coast	100.0	445,000	493,000	72.7	80.6	12,018	11,964	10,951	11,559		100.0	103,000	104,000
Appalachian	94.8	91,000	111,000	62.3	76.0	1,827	1,805	888	955		98.7	18,000	21,000
Ind., Ill., Ky.	95.9	325,000	334,000	76.7	78.8	7,228	7,264	3,578	3,892		99.7	111,000	112,000
Okla., Kans., Mo.	84.8	233,000	232,000	60.7	60.4	4,559	4,815	4,537	4,610		89.1	65,000	65,000
Inland Texas	48.5	88,000	97,000	55.0	60.6	1,326	1,185	1,652	1,702		70.9	22,000	27,000
Texas Gulf	96.8	594,000	615,000	90.3	93.5	4,211	4,938	10,730	10,778		98.5	122,000	123,000
La. Gulf	96.4	126,000	138,000	77.3	84.7	1,143	1,110	4,603	4,994		96.1	24,000	27,000
No. La., Ark.	90.0	43,000	48,000	59.7	66.7	240	245	544	540		95.7	8,000	8,000
Rocky Mt.	61.9	46,000	46,000	76.7	76.7	774	715	764	771		84.8	15,000	13,000
California	92.6	492,000	522,000	62.4	66.2	9,360	9,148	66,327	66,480		100.0	56,000	55,000
TOTAL	89.6	2,483,000	2,636,000	71.6	76.0	42,686	43,190	104,574	106,281		95.9	544,000	555,000

*Includes stocks at refineries, in bulk terminals, pipe lines and in transit.

Domestic Fuel Oil in Brisk Demand As Weather Continues Favorable

STIMULATED by colder weather throughout most of the northerly sections of the country, light fuel oils attracted most of the attention in petroleum markets the first week of December. Prices generally were steady to higher, with supplies inclined to be scarce in some areas.

Almost without exception traders were anticipating higher prices as soon as jobbers begin refilling their tanks. Stocks of fuel oil were considerably below inventories at the corresponding period a year ago, while prices were approximately the same.

The stock position of the heavier fuel oils was not as favorable as that of the light oils. In some sections the surplus of heavy grades still was burdensome. This was leading to some price shading.

* * *

TULSA, Dec. 7.—Mid-Continent light fuel oils were on the move again. Replacement orders from Northern distributors have caused a marked improvement in market conditions. Nos. 1 to 3 oils were extremely difficult to obtain in any volume at existing prices. As the week ended, more sales were reported at the highs of the price ranges. Should present demand continue, observers believed a general price advance would be warranted.

Supplies of East Texas light fuel were small in volume. Several purchasers who normally buy in that district were seeking requirements in other districts.

Reports from the field indicated that some relief had been obtained on heavy fuel oils. Stocks still were burdensome. This was substantiated by the low prices bid on government requirements. Railroads continued to order out only the minimum amounts specified in their contracts with suppliers.

Cracking stocks were unchanged.

* * *

CHICAGO, Dec. 7.—Light fuel oils continued to hold an extremely favorable position in the Mid-Western tank car market the week ended Dec. 7.

With the burner season in full swing for the past several weeks, movement of these oils has been good. Many traders were expecting higher prices, which so far, have failed to materialize.

A comparison of the American Petroleum Institute's stocks figures for 1934 against 1935 reveals that inventory of gas and fuel oils the week ended Nov. 30, 1935 was 7,698,000 barrels lower than one year ago.

Current prices for light fuel oils are virtually the same as a year ago.

Heavy fuel was spotty, with price shading becoming more widespread.

* * *

NEW YORK, Dec. 7.—Increased activity was noted in the market for light fuel oils in the week ended Dec. 7, as colder weather generally prevailed through the northern seaboard states.

Distributors generally reported a considerable increase in demand from their retail customers, particularly during the closing days of the week. On the other hand, movement in the wholesale market was not heavy, although it showed some improvement. Jobbers generally reported their storage was well filled and they needed to have a brisk retail demand before they would be in the market for much material.

The price situation remained about unchanged. Some reports of price shading were heard, particularly at New York harbor, during the week, although suppliers generally said they were not having much difficulty obtaining their posted prices for the goods sold, although demand might have been brisker at a lower level.

Fuel Oils

Following are tank wagon prices of various grades of heating oil at the points shown in various territories. Prices are in cents per gallon.

Prices in Effect Dec. 9, 1935

	No. 1	No. 2	No. 3	No. 4
S. O. New Jersey				
Newark, N. J.	7.5	6.25	6.25	6.25
Atlantic City, N. J.	8	6.5	6.5	6.25
Baltimore, Md.	7.5	5.5	5.5	5
Washington, D. C.	8	6.5	6.5	6.5

Discounts: At Newark and Atlantic City, purchasers taking 50,000 gals. get discount of 0.5c per gal.

Socony-Vacuum Oil Co., Inc.
(S. O. New York Division)

New York City	7.25	6.5	6.5	6
Albany, N. Y.	7.75	6.75	6.75	6.75
Rochester, N. Y.	8	7.25	7.25	7.25
Boston, Mass.	7.25	6.25	6.25	6.25
Bangor, Me.	8.75	7.25	7.25	6.25
Manchester, N. H.	8	7	7	7
Burlington, Vt.	8.75	7.25	7.25	7.25
New Haven, Conn.	7	5.75	5.75	5.75
Providence, R. I.	7.25	6.25	6.25	5.75

Discounts: At New York City, consumers taking 10,000 to 50,000 gals., get 0.25c per gal. discount when minimum amount has been reached; above 50,000 gals., 0.5c.

	No. 1	No. 2	No. 3	No.
Atlantic Refining				
Philadelphia, Pa.	6.50	5.50	....	5.5
Allentown, Pa.	9	7.5	7.5	7.5
Wilmington, Del.	8.5	7	....	6.5
Springfield, Mass.	8.75	7.25	....	7.25
Worcester, Mass.	8.75	7.25	....	7.25
Hartford, Conn.	8.5	7	....	7
S. O. Ohio				
Ohio Statewide	8	7.75	7.50	7.25

Note: S. O. Ohio prices are for hose dumps; bucket dumps are 0.5c per gallon higher.

S. O. Indiana
Stanolex Fuel Oil

	No. 1	No. 3
Chicago	7	6.2
Indianapolis	*11.7	*11.2
Detroit	6.5	6.5
Minneapolis	8.2	7.2
Sioux City	6.8	6.4
St. Louis	7.2	6.5
Kansas City	6.6	5.9

*Includes state tax of 4c.
Note: Small-lot deliveries of light fuel oils range from 0.5c to 1.5c higher than above quotations.

Tank Wagon Changes

(*Continued from page* 71)

of cut as reported on page 53, Dec. 4 issue. Prices shown in table were correct.

S. O. New York—Kerosine:

Boston, cut 0.25c, Nov. 7.

Price at Borough of Richmond (Staten Island has been in error since Nov. 13 issue, should be 7.25c instead of 7.35c.

Atlantic Refining—White Flash Plus:

Thru New Jersey, Maryland and North Carolina, up 0.3c, Dec. 2; except Baltimore, up 0.2c; Hagerstown, t.w. cut 1.2c.

Wilmington, Del., up 2c, Nov. 30.

Worcester, s.s. cut 2c, Nov. 20.

Fall River, s.s. up 2c, Nov. 27.

Brunswick, up 0.5c, Nov. 25.

Jacksonville, up 0.5c, Nov. 18.

Kerosine:

New Haven, up 0.25c, Nov. 29.

S. O. Ohio—X-70:

Jackson County, t.w. cut 1c, s.s. cut 2c, Dec. 1.

Renown:

Jackson County, cut 0.5c, Dec. 1.

S. O. Kentucky—Crown:

Thru Mississippi, Alabama and Georgia, up 0.5c, Nov. 25; except Atlanta, up 1c.

Thru Florida, up 0.5c, Nov. 18; except Pensacola, t.w. up 0.75c, s.s. up 1c.

Vicksburg, t.w. cut 0.5c, s.s. cut 1c, Nov. 15.

Montgomery, cut 0.5c, Nov. 29.

Kyso:

Thru Mississippi, Alabama and Georgia, up 0.5c, Nov. 25; except Jackson, t.w. up 1.5c, s.s. up 2c; Birmingham, t.w. up 0.75c, s.s. up 1c; Atlanta, up 1c; Savannah unchanged.

Vicksburg, t.w. cut 2.5c, s.s. cut 3c, Nov. 15.

Mobile, t.w. cut 0.25c, s.s. cut 0.5c, Dec. 2.

Montgomery, t.w. cut 1c, s.s. cut 1.5c, Nov. 29.

Pensacola, t.w. up 0.5c, s.s. up 1c, Nov. 18; cut 1c, Dec. 2.

Kerosine:

Augusta, cut 2c, Nov. 16.

CRUDE OIL MARKETS

Prices in $ per bbl. of 42 U. S. gals. at the well, A. P. I. gravity. Prices are effective as of 7 a.m of dates as given.

Eastern Fields

Posted by Joseph Seep Purchasing Agency

Effective Nov. 20, 1935, except Corning effective Oct. 2, 1933)

Penna. Grade Oil in Southwest Penna. Pipe Lines.....$2.02
Penna. Grade Oil in Eureka Pipe Lines (West Virginia).....$1.97
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.).....$1.82
Corning Oil in Buckeye Pipe Lines (Ohio)..$1.32

Posted by Other Companies

Tide Water Pipe Co., Ltd.:
Bradford-Alleghany district (Penna. and N. Y.) (Effective Nov. 20, 1935).....$2.30
*The Pennzoil Co.: (Effective Nov. 20, 1935)
Penna. Grade Oil in National Transit Lines*$2.27
Ashland Oil & Transportation Co.:
Somerset Oil in Ashland Lines (Ky.) (Effective May 20, 1935).....$1.13
*The Pennzoil Co. posts $2.27 in Cochran, Franklin, Hamilton and Doolittle, Pa. fields; prices in other lower districts range down to $2.22 per bbl. at well.

Michigan

(Posted by Pure Oil Co.)

Midland, Midland County (Nov. 7, 1935)...$1.12

(Posted by Simrall Pipe Line Corp.)

(Effective Nov. 7, 1935)

West Branch and equal grades.....$0.96
Beaverton, Crystal, Greendale, Porter and equal grades.....$1.12

Central States Fields

Posted by Ohio Oil Co.

Effective Feb. 1, 1935)		(Effective May 22, 1935)	
Lima	$1.15	West. Kentucky	$1.13
(Effective Jan. 5, 1934)			
Princeton	$1.13	Illinois	$1.13

Canadian Fields

Posted by Imperial Oil Refineries, Ltd.

Western Ontario

(Effective Sept. 9, 1933)

Petrolia.....$2.10
Oil Springs.....$2.17

Alberta—Turner Valley

(Prices f.o.b. field tankage)

Crude:		Naphtha:	
(Effective Dec. 9, 1933)		(Effective May 21, 1934)	
40-44.9	$1.50	†Clear	$2.31
45-49.9	2.07	†Discolored	$2.55
(Effective May 21, 1934)			
50 and above	$2.19		

†Clear naphtha: 22 color; 10 lbs. vapor pressure, Reid method; 90% recovery; end point, 410°, Discolored naphtha: same specifications as for clear naphtha except color.

Mid-Continent

Posted by Stanolind Crude Oil Purchasing Co.

(Effective Sept. 29, 1933)

(In Oklahoma-Kansas)		(In North-North Central Texas)
Below 29	$0.84	$0.79
29-29.9	0.86	0.81
30-30.9	0.88	0.83
31-31.9	0.90	0.85
32-32.9	0.92	0.87
33-33.9	0.94	0.89
34-34.9	0.96	0.91
35-35.9	0.98	0.93
36-36.9	1.00	0.95
37-37.9	1.02	0.97
38-38.9	1.04	0.99
39-39.9	1.06	1.01
40 and above	1.08	1.03

Above Stanolind prices met as follows:

Sept. 29, by The Texas Co. in Oklahoma, and in North and North Central Texas; Continental Oil in all three states; by Empire, White Eagle and Gypsy (Gulf).

See also Carter Oil, Magnolia, Humble schedules below and footnotes under Carter table.

Posted by Carter Oil Co.

(In Oklahoma and Kansas)

(Effective Sept. 29, 1933)

Below 25	$0.76	33-33.9	$0.94
25-25.9	0.78	34-34.9	0.96
26-26.9	0.80	35-35.9	0.98
27-27.9	0.82	36-36.9	1.00
28-28.9	0.84	37-37.9	1.02
29-29.9	0.86	38-38.9	1.04
30-30.9	0.88	39-39.9	1.06
31-31.9	0.90	40 and above	1.08
32-32.9	0.92		

Sept. 29, Carter gravity and price schedule met in Oklahoma-Kansas by Sinclair-Prairie, and Humble price schedule met in North-North Central Texas except that Sinclair-Prairie posts five lower grades down to below 25, with 2c differential for each. Same day, Shell Petroleum met Carter in full in Oklahoma-Kansas.

Posted by Magnolia Petroleum Co.

(Effective Sept. 29, 1933)

In Oklahoma, same schedule as Carter Oil, which see above, beginning with below 25, at $0.76 and ending with 40 & above, at $1.08.

In Texas: North and North Central, including Burkburnett, Archer, Stephens, Henrietta, Electra, Comanche and Olden; and in Central Texas, including Mexia, Wortham, and Panola county, same gravity and price schedule as Stanolind in Texas, which see above, beginning with below 29 at $0.79, and ending with 40 and above, at $1.03.

†Posted by Humble Oil & Refining Co.

(*In North, North Central and Central Texas)

(Effective Sept. 29, 1933)

Below 29	$0.79	35-35.9	$0.93
29-29.9	0.81	36-36.9	0.95
30-30.9	0.83	37-37.9	0.97
31-31.9	0.85	38-38.9	0.99
32-32.9	0.87	39-39.9	1.01
33-33.9	0.89	40 and above	1.03
34-34.9	0.91		

*Including North Texas, Ranger, Mexia, Powell, Boggy Creek, Richland, Wortham, Currie and Moran fields.

†Effective Dec. 1, 1934, Humble prices are based on 99% tank tables at 60F. Allowance or deduction of 1% is made for each 25° change in temperature above or below 60F.

Panhandle Texas

Posted by Humble Oil & Refining Co.

(Effective Sept. 29, 1933)

	Gray County	Carson-Hutchinson
Below 35	$0.79	$0.69
35-35.9	0.81	0.71
36-36.9	0.83	0.73
37-37.9	0.85	0.75
38-38.9	0.87	0.77
39-39.9	0.89	0.79
40 & above	0.91	0.81

Sept. 29, above prices met by Sinclair-Prairie, Magnolia and The Texas Co. in the entire area, also by Continental Oil in Carson-Hutchinson.

East Texas

(Effective Sept. 29, 1933)

Stanolind, Humble, Sinclair-Prairie, Texas and Magnolia.....$1.00

West Texas and New Mexico

Posted by Humble Oil & Refining Co.

(Effective Sept. 29, 1933)

Ector, Pecos and Winkler Counties, W. Texas and Lea Co., N. M.....$0.75
Crane, Upton, Crockett, Howard and Glasscock county, W. Tex.....$0.70

Sept. 29, Magnolia met in Crane, Upton, Howard, Glasscock, Mitchell and Winkler. Sept. 29, Texas Co. met Humble in Winkler, Crane, Upton and Lea counties; Stanolind Oil & Gas met in Hendrich field, Winkler county and posted in Marion county, Tex. below 25 at $0.63, plus 2c differential to 40 & above at $0.95.

South and Southwest Texas

Posted by Humble Oil & Refining Co.

(Effective Sept. 29, 1933)

Darst Creek	$0.87	Pettus	$1.05
Salt Flat	0.87	Tomball	1.15

(Effective June 29, 1935)

Saxet	$0.80	Mirando	$0.75

(Effective Aug. 20, 1935)
Anahuac (Chambers county) and Dickinson (Galveston county)

30-30.9	$0.94	36-36.9	$1.06
31-31.9	0.96	37-37.9	1.08
32-32.9	0.98	38-38.9	1.10
33-33.9	1.00	39-39.9	1.12
34-34.9	1.02	40 & above	1.14
35-35.9	1.04		

Sept. 30, The Texas Co. met Humble in Darst Creek. On Sept. 29 it posted $0.80 in Duval county and $0.85 in Saxet-Greta.

Oct. 2, Magnolia posted $0.87 in Darst Creek and $1.15 in Tomball; Sept. 29 it posted $0.75 in Luling and $0.95 in Lytton Springs; on July 3, 1935, $0.75 for Mirando. Jan. 11, 1934 $1.00 for Cleveland, Liberty county, Tex.; Aug. 8, 1935, $0.93 in Hardin, Liberty county, Tex.

Posted by Humble

Conroe (*Montgomery Co., Tex.*)

(Effective Sept. 29, 1933)

35-35.9	$1.09	38-38.9	$1.13
36-36.9	1.11	39-39.9	1.17
37-37.9	1.13	40 & above	1.19

Sept. 30 Texas Co. met above prices.

North Louisiana-Arkansas

Posted by Standard Oil Co. of Louisiana

(Effective March 17, 1934, except Homer, Smackover and Nevada county, Sept. 29, 1933).

(In Caddo, Homer, Haynesville, Sabine, De Soto Sarepta, Carterville, El Dorado and Miller county)

Below 25	$0.71	33-33.9	$0.89
25-25.9	0.73	34-34.9	0.91
26-26.9	0.75	35-35.9	0.93
27-27.9	0.77	36-36.9	0.95
28-28.9	0.79	37-37.9	0.97
29-29.9	0.81	38-38.9	0.99
30-30.9	0.83	39-39.9	1.01
31-31.9	0.85	40 and above	1.03
32-32.9	0.87		

Smackover, Ark.....$0.70
Nevada, Ark.....0.60
Urania, La. (La. Oil Refg. Co., Jan. 1, '34)..0.87

*Gulf Coastal Fields

Posted by Humble Oil & Refining Co

(Effective Sept. 29, 1933)

Below 20	$0.82	27-27.9	$0.99
20-20.9	0.84	28-28.9	1.01
21-21.9	0.86	29-29.9	1.02
22-22.9	0.88	30-30.9	1.04
23-23.9	0.90	31-31.9	1.06
24-24.9	0.92	32-32.9	1.08
25-25.9	0.94	33-33.9	1.10
26-26.9	0.96	34 and above	1.12

Refugio heavy (Effective June 29, 1935).....$0.80

Effective Dec. 1, 1934 Humble prices are based on 99% tank tables at 60 F. Allowance or deduction of 1% is made for each 25° change in temperature above or below 60 F.

*Includes these fields: Barbers Hill, Goose Creek Hull, Humble, Liberty, Moss Bluff, Orange, Pierce Junction, Rabbs Ridge, Raccoon Bend, Refugio light, Sour Lake, Spindletop, Sugarland, and West Columbia.

Above prices met Sept. 29 by Sinclair-Prairie and Sun Pipe Line Co.

Posted by The Texas Co.

(Effective Sept. 30, 1933)

Same gravity and price schedule as Humble up to 30-30.9 gravity, which see; plus these grades:

30-30.9	$1.04	36-36.9	$1.10
31-31.9	1.05	37-37.9	1.11
32-32.9	1.06	38-38.9	1.12
33-33.9	1.07	39-39.9	1.13
34-34.9	1.08	40 and above	1.14
35-35.9	1.09		

Partlavaca (Tex. Gulf effective May 17, 1935).$0.80

Rocky Mountain Fields

Posted by Stanolind Oil & Gas Co.

(Effective Sept. 29, 1933)

Salt Creek and Dutton Creek, Wyo. Same schedule as Stanolind posts in Oklahoma-Kansas which see on first crude price page.

Elk Basin, light.....$1.18
Grass Creek, light.....1.18
Grass Creek, heavy.....0.62
Greybull-Torchlight.....1.18
Iles, light, Col.....0.90
Iles, heavy.....0.90
Hogback, N. M.....1.11
Frannie light (Effective May 1, 1934).....0.70
Frannie heavy.....0.62

Posted by Ohio Oil Co.

(Effective Sept. 29, 1933)

Elk Basin, Wyo.....$1.18
Grass Creek, light.....1.18
Rock Creek.....1.02
Big Muddy.....1.01
†Sunburst, Mont. (Effective July 19, 1935)...1.20

†Met by Texas Co. July 19.

Posted by *International Refining Co.

(Effective May 23, 1934)

Cutbank, Mont.....$1.45

*Texas Co. subsidiary.

(Continued on next page)

New Refining Patents

Cracking. No. 2 016 948, issued Oct. 8, 1935; filed May 19, 1931; R. F. Trow, assignor to The Texas Co.

PROCESS in which relatively dirty oil is separated by distillation into a clean vaporous gas oil fraction and a residual fraction in the presence of hot vapors evolved. The vapors are dephlegmated, a resultant clean condensate is cracked, the residual fraction is commingled with the heated clean fraction and the mixture is transferred to several reaction vessels where it is further cracked and vaporized. Both liquid phase and vapor phase cracking occur simultaneously in the same zone. The operations are traced through an accompanying diagram.

Claims (11)

Condensate oil is cracked in transit through a heating coil and resultant products pass to an enlarged cracking zone where separation of vapors and liquids occurs. Vapors are passed to a fractionating tower wherein a condensate is formed which is conducted to the aforesaid heating coil. Fresh charging stock is passed in heat exchange relation with vapors in a higher temperature section of the fractionating tower and then into the distilling chamber at a temperature within the cracking range. Resultant liquid residue is combined with highly heated products discharged from the aforesaid heating coil so that the combined products are in contact in the enlarged reaction zone to increase the rate of cracking on the constituents from the heating coil. The time of reaction on the residual constituents is limited by withdrawing liquid from the enlarged reaction zone at a rate adequate to prevent the accumulation of liquid.

* * *

Distillation. No. 2 017 820, issued Oct. 15, 1935; filed Aug. 24, 1935; J. E. Schulze, assignor to Red River Refining Co.

MANUFACTURE of lubricating oils as direct overhead distillates from any crude, no matter how high may be its content of sulfur, organic acids or other contaminating impurities, without additional finishing treatment such as acid treatment or filtration.

Process involves vaporization of starting material, fractional condensation at not over 25 mm. pressure of the resultant vapors in the presence of an alkaline neutralizing agent in such manner that separation of the desired condensate is effected with minimum exposure to contact with the lighter vapors and gases which carry most of the deleterious compounds. The desired condensate is not allowed to cool materially below the temperature at which it is formed until after chance contacts are impossible.

Hot vapors and gases formed are conducted upwardly in counter-current contact with downwardly flowing lubricating oil condensate formed at a higher point.

The operations are traced through three accompanying diagrams. Twenty-six claims substantiate the above.

* * *

Stabilizer. No. 2 016 648, issued Oct. 8, 1935; filed Sept. 16, 1931; J. W. Orelup.

STABILIZER in the class of leuco anthraquinones. Those having added oxygen containing radicals are particularly effective, for example, leuco-chinizarian, which is 1.4 dihydroxy anthraquinone, is highly effective when two ounces to one pound are used per tank car or cracked gasoline.

Two claims substantiate the above.

* * *

Lubricant coloring. No. 2 017 529, issued Oct. 15, 1935; filed Aug. 29, 1932; F. S. Clulow, assignor to Shell Dev. Co.

AS A source of coloring matter, a pitch produced by oil gas manufacturing processes, wherein hydrocarbons are injected into an alternatively heated chamber packed with a mass of refractory material and decomposed at temperatures above 1400°F. in the presence of steam at atmospheric pressure, and cooled to separate more volatile substances. The flash point of the resultant pitch is at least 325°F.

One claims substantiates the above.

CRUDE OIL MARKETS

Continued from preceding page

CALIFORNIA, Posted by Standard Oil of California

All gravities above those quoted take highest price offered in the field. Effective Dec. 6, 1935

Gravity	Signal Hill	Seal Beach, Alamitos Heights	Huntington Beach	Inglewood	Playa Del Rey	Olinda-Brea Canon	Athens-Rosecrans Dominguez	Elwood Terrace	Torrance	Richfield	Whittier La Habra	Montebello	Coyote Hills	Santa Fe Springs	Newhall McKittrick Kern River Round Mountain	Mountain View	Midway Sunset Elk Hills Buena Vista Hills	Lost Hills	Coalinga	Wheeler Ridge	Gravity
14-14.9	$0.75	$0.74	$0.73	$0.74	$0.75	$0.71			$0.75	$0.71	$0.71	$0.72	$0.73		$0.65		$0.65	$0.65	$0.65		14-14.9
15-15.9	.75	.74	.73	.74	.75	.71			.75	.71	.71	.72	.73		.65		.65	.65	.65		15-15.9
16-16.9	.75	.74	.73	.74	.75	.71			.75	.71	.71	.72	.73		.65		.65	.65	.65		16-16.9
17-17.9	.75	.74	.73	.74	.75	.71			.75	.71	.71	.72	.73		.65		.65	.65	.65		17-17.9
18-18.9	.75	.74	.73	.76	.75	.73			.75	.71	.71	.72	.73		.65		.65	.65	.65		18-18.9
19-19.9	.75	.74	.74	.77	.76	.75			.77	.71	.71	.72	.73		.65	$0.65	.66	.68	.66	$0.65	19-19.9
20-20.9	.76	.74	.76	.79	.79	.77			.78	.71	.73	.72	.73			.65	.68	.71	.67	.65	20-20.9
21-21.9	.78	.74	.78	.81	.81	.79			.80	.71	.75	.72	.75	$0.73		.65	.71	.73	.69	.65	21-21.9
22-22.9	.80	.74	.80	.82	.84	.81			.81	.73	.77	.72	.77	.73		.66	.74	.75	.71	.67	22-22.9
23-23.9	.82	.77	.82	.84	.86	.83	$0.79		.83	.75	.79	.74	.79	.73		.67	.77	.77	.73	.69	23-23.9
24-24.9	.84	.80	.84	.86	.88	.84	.81		.84	.77	.80	.76	.81	.75		.69	.80	.80	.75	.71	24-24.9
25-25.9	.86	.82	.86	.87	.91	.86	.83		.86	.79	....	.78	.82	.77		.71	.83	.82	.77	.73	25-25.9
26-26.9	.88	.85	.88	.89	.93	.88	.86		.88	.81	....	.80	.84	.79		.73	.86	.85	....	....	26-26.9
27-27.9	.90	.88	.90	.91	....	.90	.88		....	.83	....	.82	.86	.82		.76	.88	.88	....	....	27-27.9
28-28.9	.92	.90	.91	.92	....	.92	.90		....	.85	....	.83	.88	.84		.78	.91	.90	....	....	28-28.9
29-29.9	.94	.93	.93	.94	....	....	.93		....	.87	....	.85	.90	.86		.80	.94	.92	....	....	29-29.9
30-30.9	.96	.95	.95	.95	....	....	.95					.87	.92	.89		.83	.97	.94	....	....	30-30.9
31-31.9	....	....	....	.97	....	....	.97		Kettleman Hills			.89	.94	.91		.85	.99	....	....	....	31-31.9
32-32.9	....	....	....	.99	....	....	1.00					.91	.96	.93		.87	1.02	....	....	....	32-32.9
33-33.9	....	....	....	....	....	....	....	F.O.B. Ship	$0.99	....	$0.95	.93	.98	.95		.89	1.04	....	....	....	33-33.9
34-34.9	....	....	....	....	....	....	....	1.01	....	.97	....	.95	1.00	.98		.91	....	....	....	....	34-34.9
35-35.9	....	....	....	....	....	....	....	1.03	....	.99	....	.97	....	1.00		....	....	....	....	....	35-35.9
36-36.9	....	....	....	....	....	....	....	1.05	....	1.02	....	.99	....	1.02		....	....	....	....	....	36-36.9
37-37.9	....	....	....	....	....	....	....	1.07	....	1.05	....	1.00	....	1.04		....	....	....	....	....	37-37.9
38-38.9	....	....	....	....	....	....	....	....	....	1.08	....	1.03	....	1.07		....	....	....	....	....	38-38.9
39-39.9	....	....	....	....	....	....	....	....	....	1.11	....	1.05	....	....		....	....	....	....	....	39-39.9
40-40.9	....	....	....	....	....	....	....	....	....	....	....	1.07	....	....		....	....	....	....	....	40-40.9

F.O.B. Standard Pipe Line

SEABOARD MARKETS, Export *and* Coastwise

PRICES *DO NOT* INCLUDE FEDERAL TAX

Where $ mark is shown, prices are per barrel of 42 U. S. gallons.

Eastern Domestic

(Prices in cents per gallon tank car lots, unless otherwise noted, f.o.b. refinery or seaboard terminal, representing majority of sales and quotations to jobbers and/or consumers. Florida and S. Carolina inspection tax not included.)

*Motor Gasoline

Prices Dec. 9	60-64 Octane	65 Octane and Above
New York harbor	6.25 – 6.50	6.50 – 6.75
New York harbor, barges	6.00 – 6.25	6.25 – 6.50
Philadelphia district	6.25	6.50
Baltimore district	6.25	6.50
Norfolk district	6.25	6.50
Wilmington, N. C., district	6.25	6.50
Charleston, S. C., district	6.25	6.50
Savannah district	6.50	6.75
Jacksonville district	6.50	6.75
Portland district	6.50	6.75
Boston district	6.50	6.75
Boston district, barges	6.25	6.50
Providence district	6.25	6.50
Providence district, barges	6.00	6.25

*Due to lack of companies offering U. S. Motor gasoline, 59 octane and below in the open market, prices for this grade are discontinued. Quotations nominally are 0.25c below those for 60-64 octane grade.

Water White Kerosine

Prices Dec. 9			
New York harbor	5.00 – 5.25	Savannah district	5.50
N. Y. harbor, barges	4.875– 5.125	Jacksonville district	5.50
Philadelphia district	5.25	Portland district	5.25 – 5.50
Baltimore district	5.25	Boston district	5.00 – 5.25
Norfolk district	5.25	Boston dist., barges	4.875– 5.125
Wilmington, N. C.	5.25	Providence district	5.00 – 5.25
Charleston, S. C., dist.	5.25	Providence, barges	4.875– 5.125

*Fuel Oils

Prices Dec. 9	New York harbor	New York harbor, barges	Philadelphia district
No. 1	5.00 – 5.25	4.875– 5.125	5.25
No. 2	4.25	4.125	4.25
No. 3	4.25	4.125	4.25
No. 4	4.00	3.875	3.875
No. 5 (per barrel)	$1.15	.....	$1.15
No. 6 (per barrel)	$0.95	.....	$0.95

	Baltimore district	Boston district
No. 1	5.25	5.00 – 5.25
No. 2	4.25	4.25
No. 3	4.25	4.25
No. 4	3.875	4.00
No. 5 (per barrel)	$1.15	$1.25
No. 6 (per barrel)	$0.95	$0.95

	Boston dist., barges	Providence district	Providence dist., barges
No. 1	4.875– 5.125	5.00 – 5.25	4.875– 5.125
No. 2	4.125	4.25	4.125
No. 3	4.125	4.25	4.125
No. 4	3.875	4.00	3.875

*Fuel oils meet specifications of U. S. Commercial Standards CS12-35.

	Bunker Oil Grade C Per Barrel	Diesel Oil Ships' Bunker† Per barrel	Gas Oil 28-34 Gravity Per gallon	Diesel Oil Shore Plants Per gallon
New York harbor	*$0.95	*$1.65	4.25	4.25
Philadelphia dist.	*$0.95	*$1.65	4.25	....
Baltimore district	*$0.95	*$1.65	4.25	....
Norfolk district	*$0.95	*$1.65	4.25	....
Charleston district	$0.90	$1.65	....	....
Savannah district	$0.90	$1.65	....	4.50
Jacksonville dist.	$0.90	$1.65	....	4.50
Tampa district	$0.90	$1.65	....	....
Portland district	$1.05	$1.75	....	....
Boston district	$0.95	*$1.65	....	....
Providence district	$0.95	$1.65	....	....

*Lighterage for bunker oil, 5c per bbl. additional; for Diesel oil, 6.5c per bbl. additional.

Pacific Export

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

Prices—	Dec. 9	Dec. 2	Nov. 25
53-55 U. S. Motor	5.00 – 5.50	5.00 – 5.50	4.75 – 5.25
400 e.p. blend 65 Octane and above	5.25 – 6.00	5.25 – 6.00	5.00 – 6.00
38-40 w.w. kerosine, 150 fire point	4.25 – 5.00	4.25 – 5.00	4.25 – 5.00
41-43 w.w. kerosine	4.50 – 5.00	4.50 – 5.00	4.50 – 5.00
44 water white kerosine	5.00	5.00	5.00
Prime wh. kerosine	4.00 – 4.50	4.00 – 4.50	4.00 – 4.50
In Cargo lots, per barrel:			
Diesel uel oil, above 23.9°	$1.05 –$1.15	$1.10 –$1.15	$1.10 –$1.15
Diesel fuel oil, under 23.9°	$1.00 –$1.05	$1.05 –$1.15	$1.05 –$1.15
30-34 gas oil	$1.05 –$1.10	$1.10 –$1.15	$1.10 –$1.15
Grade C fuel oil	$0.80 –$0.85	$0.80 –$0.85	$0.80 –$0.85
In Ships' Bunkers, or deep tank lots, per barrel:			
Diesel fuel oil, above 23.9 gravity	$1.125–$1.15	$1.125–$1.15	$1.125–$1.15
Diesel, under 23.9 gravity	$1.025–$1.05	$1.10 –$1.15	$1.10 –$1.15
Grade C fuel oil	$0.825–$0.85	$0.825–$0.85	$0.825–$0.85
Pacific Export (cont'd)	Dec. 9	Dec. 2	Nov. 25
Cased Goods:			
Gasoline, U.S. Motor	$1.40 –$1.50	$1.40 –$1.50	$1.40 –$1.50
Gasoline, 400 e.p. blend	$1.60 –$1.75	$1.60 –$1.75	$1.60 –$1.75
38-40 w.w. kerosine, 150 fire point	$1.15 –$1.30	$1.15 –$1.30	$1.15 –$1.30
Kerosine, prime white	$1.15 –$1.20	$1.15 –$1.20	$1.15 –$1.20

New York Export

(Prices in cents per gallon in barrels, F.a.s. New York)

Cylinder Oils (Pennsylvania Products)

	Dec. 9	Dec. 2	Nov. 25
Bright stock:			
Light, 25 pour point	26.00	26.00	26.00
Dark, 25 pour point	25.50	25.50	25.50
Neutral oil:			
200 3 color, 25 pour pt.	29.50	29.50	29.50
150 3 color, 25 pour pt.	25.00	25.00	25.00
600 Warren E filtered	20.00	20.00	20.00
600 stm. refd. unfiltered	16.50	16.50	16.50
650 stm. rfd. unfiltered	18.00	18.00	18.00
600 flash, steam refined	19.00	19.00	19.00
630 flash, steam refined	24.00	24.00	24.00

Wax Domestic *and* Export

(Prices in cents per pound. Tests made by A. S. T. M. methods. Melting points shown below, however, are A. M. P., 3° higher than A. S. T. M. (E. M. P.) melting points. Export prices are f.a.s. carload lots. Domestic prices are f.o.b. refineries in New York and New Orleans districts, in bags, carload lots, with 0.2c discount allowed for shipment in bulk).

	New York		New Orleans	
Prices—Dec. 9	*Domestic*	*Export*	*Domestic*	*Export*
124-6 Y.C. scale	2.25 – 2.30	2.25 – 2.30	2.25 – 2.30	2.25 – 2.30
122-4 W.C. scale	2.25 – 2.30	2.25 – 2.30	2.25 – 2.30	2.25 – 2.30
124-6 W.C. scale	2.25 – 2.35	2.25 – 2.35	2.25 – 2.35	2.25 – 2.35
123-5 Fully refined	4.20	3.625	4.20	3.625
125-7 Fully refined	4.30	3.75	4.30	3.75
128-30 Fully refined	4.55	4.00	4.55	4.00
130-2 Fully refined	4.80	4.25	4.80	4.25
133-5 Fully refined	*5.10	4.75	*5.10	4.75
135-7 Fully refined	*5.35	5.00	....	....

*Shipment either in bags or in bulk.

Gulf Coast

(Prices are f.o.b. Gulf oil terminals representing sellers' opinions except prices specified to the contrary. Prices cover bulk shipments of 20,000 barrels or more, unless otherwise noted.)

Motor Gasoline

For Domestic Shipment

Prices—	Dec. 9	Dec. 2	Nov. 25
59 octane and below	5.375	5.25	5.25
60-64 octane number	5.50	5.375– 5.50	5.375– 5.50
65 octane and above	5.625	5.50 – 5.625	5.50 – 5.625

Fuel Oils

No. 1 Fuel oil	4.00	4.00	4.00
No. 2 Fuel oil	3.25	3.25	3.25
No. 4 Fuel oil	3.00	3.00	3.00

Kerosine

41-43 w.w.	4.00	4.00	4.00

Gasoline

For Export Shipment

U. S. Motor gasoline	5.375	5.125– 5.25	5.125– 5.25
60-62, 400 e.p. gasoline	5.50	5.125– 5.25	5.125– 5.25
61-63, 390 e.p. gasoline	5.625	5.25 – 5.375	5.25 – 5.375
64-66, 375 e.p. gasoline	5.75	5.50	5.50
U. S. Motor, cases (cargoes)	$1.20 –$1.25	$1.20 –$1.25	$1.20 –$1.25
64-66, 375 e.p. cases (cargoes)	$1.25 –$1.30	$1.25 –$1.30	$1.25 –$1.30

Kerosine

44 water white	4.25	4.25	4.25
41-43 water white	3.875– 4.00	3.875– 4.00	3.875– 4.00
41-43 prime white	3.875	3.875	3.875
W.W., cases (cargoes)	$1.15 –$1.20	$1.15 –$1.20	$1.15 –$1.20
P.W., cases (cargoes)	$1.10 –$1.15	$1.10 –$1.15	$1.10 –$1.15

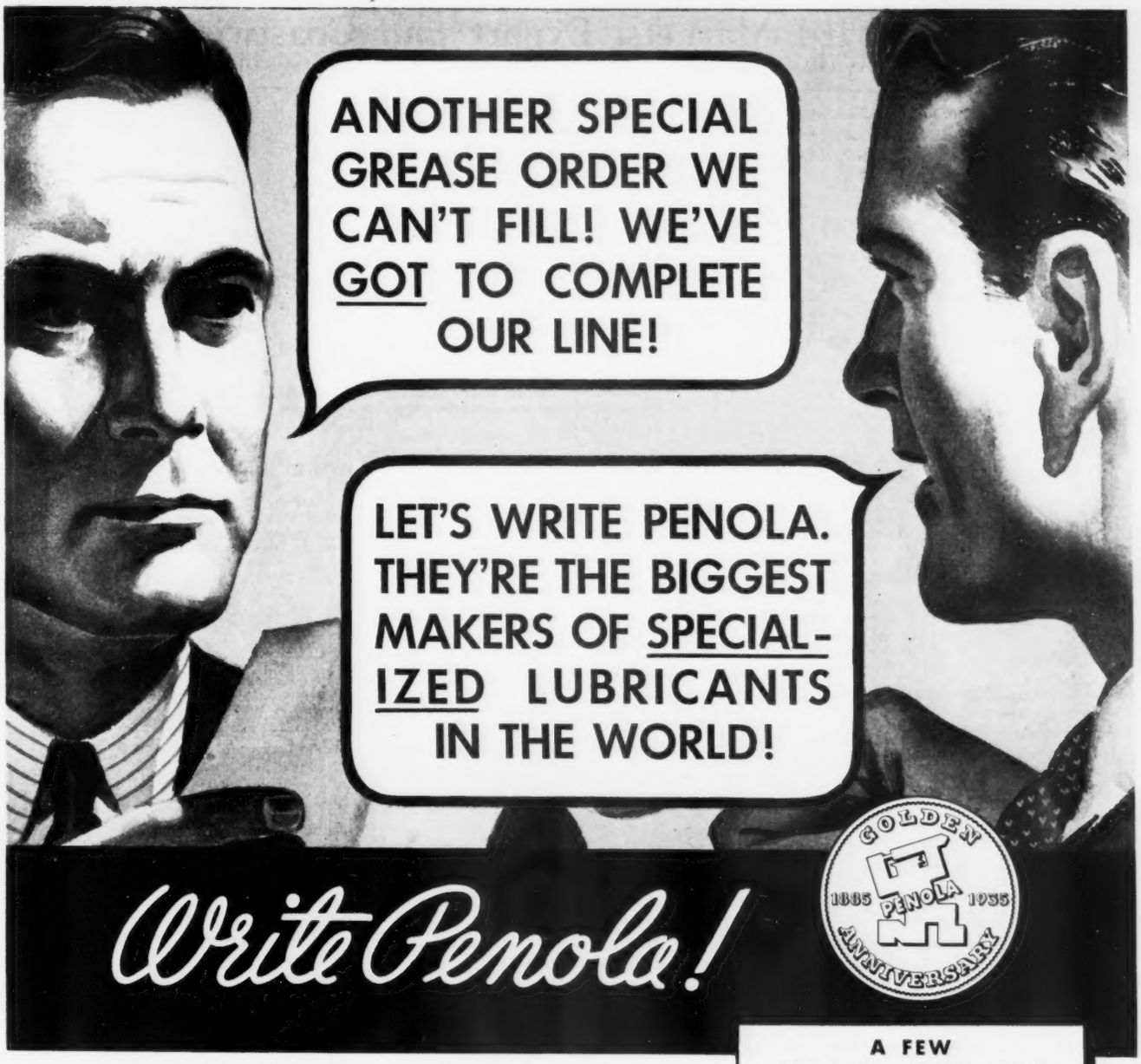
Gas and Bunker Oils

For Domestic and/or Export Shipment

*26-30 translucent gas oil	3.125– 3.25	3.125– 3.25	3.125– 3.25
*30 plus translucent gas oil	3.125– 3.25	3.125– 3.25	3.125– 3.25
*30 plus transp. gas oil	3.25	3.25	3.25
Diesel Oil Ships' bunkers	†$1.50	†$1.50	†$1.50
Grade C bunker oil, for ships' bunkers, per bbl.	†$0.80	†$0.80	†$0.80
Grade C bunker oil, per bbl. in cargoes	$0.70	$0.70	$0.70

*Less than ½ of 1% sulphur. †Lighterage 5c per bbl. additional.

(*Continued on page* 78)


ANOTHER SPECIAL GREASE ORDER WE CAN'T FILL! WE'VE GOT TO COMPLETE OUR LINE!
LET'S WRITE PENOLA. THEY'RE THE BIGGEST MAKERS OF SPECIAL-IZED LUBRICANTS IN THE WORLD!
Write Penola!
GOLDEN
1885
PENOLA
1935
ANNIVERSARY

PETROLEUM marketers have to think fast these days.

Problems galore. Competition stiff. Lubrication requirements changing constantly.

That's why jobbers are depending more and more on Penola. They're profiting by the skill and experience that have made Penola the world's largest manufacturer of greases, cutting oils and specialized petroleum products.

For 50 years, Penola Lubricants have been overcoming technical difficulties in the field. And the great Penola organization has been built to serve Penola marketers quickly and economically.

When you need a special lubricant, you will find exactly what you want among the 1000 products comprising the Penola line, which includes replacements for every grease made.

What's more, when a design change in motor cars or industrial mechanisms affects lubrication, Penola's research engineers will always be ready with the lubricant that is *exactly* right for the job!

Penola pays steady dividends to every marketer—not only in cash, but also in the widened markets and lengthened customer list that the backing of Penola assures.

Bring your grease problems to Penola. Tie up to the greatest authority in the industry. Climb on the Penola band-wagon and you'll *go* places!

Penola products are sold to oil companies and jobbers. Write Penola for prices of standard and special lubricants.

A FEW PENOLA LUBRICANTS

PENOLA COMPOUND
the Extreme Pressure Lubricant

•

PENOLA GEAR LUBRICANT
in summer and winter viscosities

•

PENOLA PRESSURE LUBRICANTS
in 3 grades for all-year use

•

PENOLA WHEEL BEARING LUBRICANT
won't cake, harden, or separate

•

PENOLA UNIVERSAL LUBRICANTS
for all types of universal joints

•

PENOLA WATERPROOF LUBRICANT
prevents leaks, protects pumps

•

PENOLA EXPEE COMPOUND
for high-speed hypoid drives

PENOLA LUBRICANTS

Penola Inc., 30 Rockefeller Plaza, New York City
(Formerly Pennsylvania Lubricating Company)

Grease works operated at
Baltimore, Md.
Baton Rouge, La. · Eldorado, Kan. · Pittsburgh, Pa.

Seaboard Markets, Export *and* Coastwise

Where $ mark is shown, prices are per barrel of 42 U. S. gallons. ***Prices Do Not Include Federal Tax***

(*Continued from page 76*)

Mexican Crude and Bunker Oils

(F.o.b. Steamer, Tampico)

Prices—	Dec. 9	Dec. 2	Nov. 25
Heavy Panuco crude taxes to be paid, per bbl.	$0.88 –$0.90	$0.88 –$0.90	$0.88 –$0.90
Grade C bunker oil, ships' bunkers, taxes paid, per bbl.	$0.80	$0.80	$0.80

Mid-Continent Lubricating Oils

(Prices in cents per gallon in bbls. f.a.s. Gulf terminals. In drums and new barrels, 0.5c to 1c higher per gal. in some instances.)

190-200 vis. D 210 brt. stk.	25.00	25.00	25.00
150-160 vis. D 210 brt. stk.:			
0-10 pour point	22.50	22.50	22.50
10-25 pour point	22.00	22.00	22.00
25-40 pour point	21.50	21.50	21.50
150-160 vis. E 210 brt. stk.	21.50	21.50	21.50
120 vis. D 210 bright stock	21.00	21.00	21.00
180 vis. No. 3 color neutral oil:			
0-10 pour point	17.25 –17.50	17.25 –17.50	17.25 –17.50
15-30 pour point	16.25 –16.50	16.25 –16.50	16.25 –16.50
200 vis. No.3 color neutral oil:			
0-10 pour point	17.75 –18.00	17.75 –18.00	17.75 –18.00
15-30 pour point	16.75 –17.00	16.75 –17.00	16.75 –17.00
600 s.r. olive green	12.00 –12.50	12.00 –12.50	12.00 –12.50
600 s.r. dark green	10.00 –10.50	10.00 –10.50	10.00 –10.50
631 s.r.	15.50	15.50	15.50

South Texas Lubricating Oils

(Viscosity at 100° F. pour test 0. Tanker, f.o.b. Gulf oil terminals, for export shipment)

Unfiltered Pale Oils:			
Vis. Color			
100 No. 3	5.50 – 6.00	5.50 – 6.00	5.50 – 6.00
200 No. 3	6.375– 7.00	6.375– 7.00	6.375– 7.00
South Texas Lubricating Oils (cont'd)			
Unfiltered Pales (cont'd)			
Prices—	Dec. 9	Dec. 2	Nov. 25
300 No. 3	7.00 – 7.50	7.00 – 7.50	7.00 – 7.50
500 No. 3½	7.875– 8.50	7.875– 8.50	7.875– 8.50
750 No. 4	9.00 – 9.50	9.00 – 9.50	9.00 – 9.50
1200 No. 4	9.50 –10.00	9.50 –10.00	9.50 –10.00
2000 No. 4	9.75 –10.25	9.75 –10.25	9.75 –10.25
Red Oils:			
Vis. Color			
100 No. 5-6	5.50 – 6.00	5.50 – 6.00	5.50 – 6.00
200 No. 5-6	6.125– 6.75	6.125– 6.75	6.125– 6.75
300 No. 5-6	6.75 – 7.00	6.75 – 7.00	6.75 – 7.00
500 No. 5-6	7.25 – 7.625	7.25 – 7.625	7.25 – 7.625
750 No. 5-6	9.00 – 9.50	9.00 – 9.50	9.00 – 9.50
1200 No. 5-6	9.50 –10.00	9.50 –10.00	9.50 –10.00
2000 No. 5-6	9.75 –10.25	9.75 –10.25	9.75 –10.25

Note: Red oil prices shown above cover oils with green cast; prices for blue cast red oils are slightly lower in some cases.

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shipments per ton of 2240 pounds, British sterling: to U. S. ports, cents per barrel)

	Crude &/or Fuel		Refined Oil &/or Spirits	
Rates—Dec. 9	Last Paid	Owners Ask	Last Paid	Owners Ask
Calif. U.K./Continent*	14/	15/-16/	15/	15/3-16/3
Gulf-U.K./Continent*	13/6	14/-15/	13/6	14/-15/
Calif.-N. Atlantic (not E. of N. Y.)	46c	50-52c	42c	48-50c
Gulf-N. Atlantic** (not E. of N. Y.)	†29c	†29-30c	32c	33–34c

Note: Dirty boat quotations are enlarged to cover, "Fuel and Light Crude" quotations.

*Continental ports in range between Bordeaux and Hamburg, both inclusive

**Venezuela loading same rate: Tampico 2c to 3c per bbl. additional.

†Rates for heavy crude or fuel 1c to 4c higher than for light crude.

Kansas City Club To Aid Needy

KANSAS CITY—The annual Christmas Egg-Nog Keno party of the Oil Men's Club of Kansas City will be held at the President hotel Dec. 16 at noon.

The committee in charge of arrangements consists of A. J. McElvain, Columbian Steel Tank Co., C. C. Divinny, Diamond Petroleum Co., and C. L. Lockhart, Shell Petroleum Corp.

Among the keno prizes will be the annual Christmas turkey award.

The club, in keeping with its annual holiday custom, will again do its part to gladden the homes of unfortunate families and will have Santa Claus visit the little ones where he is not expected to appear.

Last Christmas 24 needy families with 89 children were furnished groceries, fuel, clothing, and toys for the children.

Members of the club's welfare committee are Art J. Daniel, Battenfeld Grease & Oil Co. and Arnold Sherwood, Bertram Naphtha Co.

Keller Made General Sales Manager

WICHITA, Kan., Dec. 7.—Several recent changes in the sales department of the Derby Oil Co. have been announced.

C. A. Keller has been made general sales manager. Mr. Keller for a number of years has been in charge of wholesale sales.

C. A. Clarke has been named sales manager, with R. M. Cooper and R. W. Charter as assistants.

J. W. Scott has been named sales representative for the company in eastern Colorado, with headquarters at Denver.

Grease Ad Campaign Features Safety

A direct mail campaign has been conducted by Battenfeld Grease & Oil Corp., Kansas City, in connection with its recent series of advertisements featuring safety.

Four advertisements were used in this campaign to show that the use of the correct lubricant, correctly applied, is a protection to the motorist. Each insertion dealt with lubricating on each of the following: water pumps, steering gears, universal joints, and wheel bearings.

The photograph of an actual accident was shown in each advertisement. In addition a line drawing was shown of the automobile mechanism which caused the accident because of its not having been properly lubricated, the copy in these advertisements stresses the need for correct greases and tells why they will result in efficient performance and greater economy.

As each advertisement appeared in NATIONAL PETROLEUM NEWS, present Battenfeld jobbers were sent a letter outlining an offer of reprints for mailing and distribution. They were told that they could increase their sale of lubricating greases by distribution of these reprints to their customers.

Prospective jobbers received similar letters in addition to copies of the advertisements. They were told that they owe it to their friends and customers to urge regular greasing at regular intervals. The suggested way to do this urging was, of course, through the reprinted advertisements of this unique campaign.

E. W. Fawcett to Return To Oil Marketing

WICHITA—E. W. Fawcett has announced his resignation as secretary of the Kansas Oil Men's Association on Jan. 1, and that he is returning to petroleum marketing.

Mr. Fawcett will market two lines of Texas oils, a solvent oil, a Pennsylvania line of the Crystal Oil Works, Oil City, and a line for the Bodie-Hoover Petroleum Corp., Chicago.

The territory to be covered includes all or parts of North and South Dakota, Minnesota, Iowa, Kansas, Nebraska, Wyoming, and Missouri. He will market oils in compartments, tank cars, and barrels.

Mr. Fawcett will establish a temporary office in Wichita, but plans to move to Omaha in the spring.

Mudge presented his first lever-escapement watch to Queen Charlotte of England, a great jewel-lover. Mudge used this escapement in only two watches, and its advantages were long overlooked.

THE BEST WAY TO DO A THING

170 years ago, when the American colonies were still subject to the English crown, Thomas Mudge, of England, devised the best way to make a watch. The expert watchmakers of all the nations have since *refined* Mudge's "lever escapement", but they cannot improve on its principle.

MARATHON, like Thomas Mudge, believes in doing things the best they can be done. It is that policy which has produced MARATHON "Timed" Gasoline, built to specifications which insure that each explosion delivers a steady, sustained *thrust* to the piston. It is the same policy which has achieved painstaking *adherence* to these specifications, day after day, at our refineries.

MARATHON products provide a sound foundation on which to build a jobbing business. If you're looking for assured quality, write us.

MARATHON PRODUCTS — BEST IN THE LONG RUN

MARATHON OIL COMPANY . . TULSA, OKLAHOMA

Sioux City, Iowa — Little Rock, Ark. — Ft. Worth, Texas

MARATHON *Timed Gasoline*

Lubrication Equipment

(*Continued from page* 59)

which naturally called for the use of two dispensers. Now we have some passenger cars that require a straight gear oil in their transmissions and differentials while others require the use of an extreme pressure gear lubricant and the need for additional dispensing units is very evident.

Gear lubricant dispensers must be equipped with reliable meters and in order to speed up the operation of servicing customers' cars, air operated units should replace the older type of hand operated equipment.

Every year more manufacturers are placing metal covers on the springs of their cars. While this equipment cannot be termed new, nevertheless the fact that these springs require periodic lubrication in order to perform their function efficiently has just been brought to the motorists' attention during the past two years. Originally, the car owner was under the impression that if the springs on his car were metal cover encased, they required no further lubrication during the life of the car. Now, however, ways and means of lubricating this type of spring cover have been developed and again we have the need for additional equipment at the service station, if the station operator is to participate in the extra profits to be derived from the sale of this extra lubrication service.

The equipment necessary for lubricating springs encased in metal covers, consits of the following units:

1. 1 Lubropak clamp.
2. 1 Gear Dispensing Unit with six foot hose and Pin Type Adapter.
3. 2 Six-inch "C" Clamps.
4. 1 Hand Drill.
5. 1 3/16-inch Bit.
6. 2 Jacks (For raising weight of car from springs).

These items are made by several of the equipment manufacturers and there is no choice to be made in them, other than in quality, with the exception of the gear dispensing unit. This unit may be secured in either a 25-pound bucket or in the form of a pumping head which is to be attached directly to the original 100-pound drum. Of the two, the latter is to be preferred for several reasons. In the first place it minimizes the possibility of contamination of the product by eliminating the need for transferring lubricant from the original container to the small bucket. Secondly, in transferring the special lubricant used into another container air is invariably trapped in the lubricant which results in air-locking the equipment. Thirdly, inasmuch as the amount of product used in servicing each car ranges from two to four pounds, the small size unit is usually found to be inadequate in the average station.

Another lubricating item of equipment that has become a necessity, the past two years, is the small pistol type pressure oiler. This oiler holds approximately one-half pint of oil and is used to apply lubricant to oil cups in generators, fans, starting motors, door latches, door hinges, and ball check fittings such as appeared on the king pin oilers of the 1935 Chrysler and De Soto.

Various types of wrenches and adapters are now available to facilitate the lubrication of brake cables, which is another source of additional profit for the wide-awake service station operator.

All service stations rendering lubrication service should have available a good quality heat gun. The primary purpose of this gun is to thin down the lubricant in the transmission and differential preparatory to draining these units during cold weather. The average modern passenger car transmission and differential contains a relatively small amount of gear lubricant, ranging from two to eight pounds, and if not thinned down before draining in cold weather, a certain percentage will remain in the housings in sufficient quantity to seriously contaminate the clean product put in the gear housings. In addition this primary use, heat guns can be used for thawing out brake drums, gasoline and oil lines and radiators. They also excell in drying out coils, timers and spark plugs.

SMALL tools are an absolute necessity at all service stations and yet it is surprising to see the lack of an assortment of small tools at the average station. Furthermore, it does not create a feeling of confidence in the customer who watches the lubrication man using different tools on his car in an unorthodox and weird manner, for example, using a pair of pliers on a water pump instead of a spanner wrench, or a pipe wrench on a crankcase plug instead of the efficient drain plug wrench devised for that purpose. A representative collection of small tools for the average lubritorium having one lift should consist of the following items:

1. 1 Putty knife for cleaning springs.
2. 1 Wire Brush (Long Handle) for cleaning sprints.
3. 1 30-inch Shackle Bar.
4. 1 Ford Shackle Bar.
5. 1 One-pound Ball Peen Hammer
6. 1 Alemite Drive Tool.
7. 1 Eight-inch Pliers (Offset).
8. 1 Six-inch Pliers.
9. 1 Water Pump Wrench.
10. 1 Six-inch Screw Driver.
11. 1 Twelve-inch Screw Driver.
12. 1 Five-in-One Tool.
13. 1 Cold Chisel.
14. 1 Six-inch Crescent Wrench.
15. 1 Eight-inch Crescent Wrench.
16. 1 Ten-inch Crescent Wrench.
17. 1 Adjustable Drain Plug Wrench.
18. 1 Reda Wrench.
19. 1 Six-inch Pipe Wrench.
20. 1 Ten-inch Pipe Wrench.
21. 1 Ten-inch Monkey Wrench.
22. 1 Hub Cap Wrench.
23. 1 Set Socket Wrenches with Special Handle for Spark Plugs.
24. 1 Set Angle End Wrenches.
25. 3 Hudson and Essex Wet Clutch Wrenches (Sizes to fit all Models).
26. 1 Tool Board.

There are other items of equipment which while not directly necessary to correctly and efficiently lubricate the modern automobile, nevertheless are mechanical aids in the sale of lubrication service and lubricants, and as such should receive the attention of the service station operator. In this category would fall the various crankcase oil flushers; the devices now on the market which impart an oscillating movement to the car on the lift, at the time it is being lubricated, thus simulating actual driving conditions; floodlights inside the lubritorium for night work; crank case oil testers, etc.

After the service station has been completely equipped for servicing the lubricating requirements of the present-day automobiles there is still another step which must be taken. A suitable lubrication guide showing all points of lubrication on the various makes and models of automobiles must be provided.

In the older days when one lubricant was all that was required to lubricate the chassis and "under the hood" points a guide was not necessary. Now with the large number of lubrication points on each car and the variety of lubricants that must be applied it is impossible for any man to be certain that he will apply the proper amount of the correct lubricant to the right place, unless he has an authentic guide, which is kept up to date periodically, to assist him.

In this day and age with the intensive service station competition that prevails, the operator who has so equipped his lubricating department that he can give a satisfactory answer to his customers' never ending query "How long will it take?" and who can lubricate those customers' cars as the car manufacturers recommend, will be in a good position to secure his share of the increase market for petroleum products which is anticipated during 1936.

Virginia Oil Men to Meet

RICHMOND, Va., Dec. 6.—A special meeting of the Virginia Oil Men's Association will be held at the Chamberlin Hotel, Old Point Comfort on Dec. 13. The meeting will be devoted largely to a discussion of the coming session of the state legislature according to an announcement by E. J. Schul, association president.

Gets Idea for Oil Plant From a Boat Trip

KANSAS CITY—Ideas for a man's business frequently come to him when a long way from his work-a-day haunts, and such was the case with Jack Nourse while on a cruise in southern waters earlier this year with Mrs. Nourse.

The boat they were traveling on was one of the steamship company's "white fleet," and true to the name the boat was painted white, inside and out. That gave Jack idea of brightening up his Nourse Oil Co. plant with white paint.

When he returned to Kansas City Jack issued instructions that the inside of his plant, tanks, lines and all, except the floor, were to be given a coat of white paint. Some of the men were skeptical about painting an oil plant white, but white barrel paint was applied, and results were evident immediately.

From the standpoint of operating costs there have been savings in light bills and workmen's compensation.

On dark days Jack estimates that his light bill out in the plant is cut in half.

Prior to the paint job the plant had numerous small accidents. None was fatal or serious, but the men were continually having accidents. Since the paint job the plant has not paid out one cent in compensation for accidents.

This change is attributed to the lighter interior, and to the fact that workmen can see the pipes better and that they are more careful in their work.

On the intangible side there has been a better spirit among the men. They have responded to the changed plant interior and their appearance during working hours has improved.

The plant is used in selling to customers, by taking them on an inspection trip to see how the company's products are made. Workmen have been informed of the function of these trips, and since the white paint job the men are more anxious to co-operate in having the work go smoothly, and in doing their part to show off the plant to the customer.

At various points throughout the plant the company has placed its black and white enameled signs, the type displayed by customers to the public. The purpose of these signs is to keep before the men who make the products the advertising given those products to the public.

(CENSORED)

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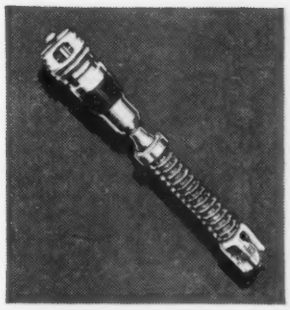
is no place to change a flat!

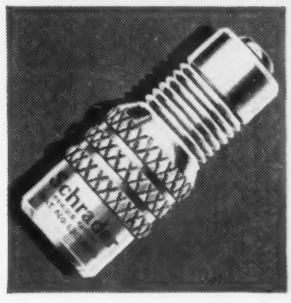
YOU can save your customers the agony of wrestling with a tire in the snow—while sharp winds bite their ears and fingers.

Build a reputation for giving the kind of service that *prevents* as well as corrects.

Make it part of your regular winter-proofing service to replace★ all "summer-worn" tire-valve cores★ and caps.★ No one will object to their small cost—when you explain the benefits of the extra protection they assure.

Send your order to your regular supplier today. A. SCHRADER'S SON, BROOKLYN, N. Y. Division of Scovill Manufacturing Company, Incorporated.





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LUX Model Two is a light, compact carbon-dioxide fire extinguisher that carries a real punch against oil and electrical fires. It kills fire with the same LUX gas-and-snow used in the larger units. Fires are *snuffed out* by the smothering action of carbon-dioxide gas . . . harmless to man or the most delicate equipment. LUX needs no annual recharging. It is good until used.

Only 16¾" high, weighing less than 11 pounds, LUX Model Two is excellent protection against fires in isolated small equipment. Electric motors, pumps, company cars and garages are effectively, economically guarded. The demand for a small unit possessing the all round effectiveness of LUX has been answered—Model Two has a definite place in your fire-protection plans.

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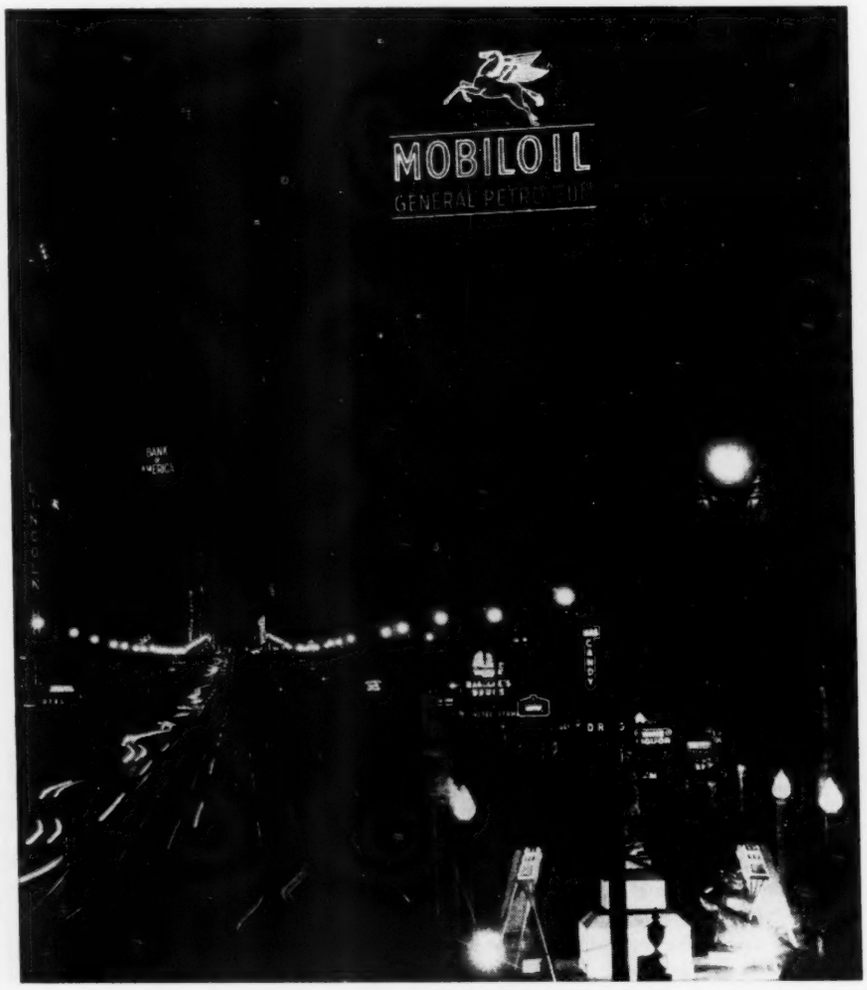
Ohio Gasoline Demand High in September

CLEVELAND, Dec. 2.—Consumption of gasoline in Ohio in September was 93,014,985 gallons, an increase of 7,792,203 gallons or 9.14% over the same month last year, according to Edward Reiser, secretary of the Ohio Code Committee.

Consumption in the first nine months of this year totaled 757,637,154 gallons, an increase of 43,010,019 gallons or 6.01% over the first nine months of 1934.

Tank car shipments to Ohio cut price jobbers in September totaled 635 cars, a decrease of 68 cars from the previous month, while 98 truck loads went to cut price jobbers compared with 103 in August. Shipments from the eastern seaboard increased from 204 in August to 231 in September, while central states suppliers furnished 308 cars, 55 fewer than in August. Only 14 cars came from the Mid-Continent compared with 27 the previous month.

	Sept.	Aug.	Decrease
Total tank cars motor fuel	635	703	68
Total tank trucks motor fuel	98	103	5
T.c. shipments by Mid-Continent suppliers	14	27	13
T.c. shipments by eastern suppliers	308	363	55
T.c. shipments by major companies	15	20	5



General Petroleum Corp. recently placed in operation a massive neon sign atop the Fife Building, at the intersection of Market, Drum and California streets, San Francisco. Four thousand feet of green and red neon tubing are used to display the company's flying horse insignia and other trade marks. This design is illuminated by four 1000-watt floodlights, located on the roof of the building. Mechanical operation of alternately changing the letters of products advertised is accomplished with a heavy-duty flasher, while the sign operation is remote-controlled by two clocks

The display, which is 5400 square feet in area, fronts two ways and is so located that it is visible from practically all directions in the city. The sign structure includes 12 tons of steel and three miles of copper wiring were utilized. The sign is 75 feet long, 57 feet high and, its highest point is 295 feet above the street level.

New Books

Flow of Gas

Recognizing the need for reliable data pertaining to flow of gas in high-pressure systems for the use of operators in designing pipelines, the Bureau of Mines, with co-operative assistance from the American Gas Association, has conducted research over the past several years for which the results are described in detail in Monograph 6.

It was found that in larger diameter lines that were free from condensates and other foreign materials and were operating under steady flow conditions, gas was delivered at metered rates which agreed more closely with rates computed from the Weymouth flow formula than from others. The several formulas were found to differ mainly in the methods of considering the coefficient of friction. The coefficient was found to decrease slightly with increasing pipe diameter, depending upon velocity, density, and viscosity of the gas as well as pipe diameter.

The authors, T. W. Johnson and W. B. Berwald, have arranged their text, comprising 120 printed pages and 25 figures, to cover flow formulas, flow tests, including methods of testing and of analyzing flow data, and the application of flow data and equation. The main text is followed by appendices giving detailed mathematical development of formulas, tables, and description of tested pipelines.

Engineering considerations include the effect on delivery capacity of liquids and rust scale, sources and removal of liquids, variations in ground temperatures, design and location of drips, corrosion of lines, stored gas in pipeline systems, effect of differences in elevation at inlet and outlet, and types of construction and equipment. The report also discusses studies that were made of the physical and chemical properties of natural gas that influence flow, including determination of chemical compositions, deviations from Boyles law, and the absolute viscosities of the natural gases.

The monograph points out that the value of applying many minor corrections in pipeline flow calculations is often greatly diminished because of conditions pertaining to individual lines, the effect of such conditions being many times greater than the sum of all of the measurable corrections, and so may be neglected.

Copies of the monograph, entitled "Flow of Natural Gas through High-Pressure Transmission Lines," and printed at the expense of the American Gas Association, 420 Lexington Ave., New York, are on sale at $1.

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The author, O. H. Bardill, has spent 15 years in the oil industry as accountant and auditor, during which he has compiled and arranged this set of tables from governmental and other statistical sources.

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ESSO INC.

Please Note That the Standard Oil Company (Indiana) HAS NO CONNECTION WITH ESSO STATIONS or ESSO Inc.

Transactions in Oil Stocks on New York Stock Exchange

1934 High	1934 Low	1935 High	1935 Low	Listed Shares	Par Value	Company	Current Dividend	Last Div. Paid	Transactions Week Ended Dec. 7 Sales Shares	High	Low	Last	Week's Change
55⅝	39	77¾	48⅛	788,675	N.P.	Amerada Corp.	50cQ	Oct. 31, 35	3,900	73	70	72¼	+ 1¾
40⅛	29⅛	40⅛	29¾	2,296,412	$25	Associated Oil Co.	45c	June 25, 35	.....	.....	.....	.....	.....
35¼	21⅛	28	20⅛	2,696,652	25	Atlantic Refining Co.	25cQ	Sept. 16, 35	23,300	24⅜	23¼	24⅝	+ 1¼
10	5⅞	13¾	5⅞	2,258,779	5	Barnsdall Corp.	20c	Nov. 1, 35	82,000	*13¾	12	13¾	+ 1⅝
9¾	5	9⅞	6¾	1,444,970	N.P.	Colonial Beacon Oil Co.	....	.....	30	9	8¾	9	+ ¼
14¼	7¼	10⅝	6½	13,996,072	N.P.	Consolidated Oil Corp.	25c	Oct. 10, 35	113,200	*10⅜	9⅞	10⅝	+ ⅜
112⅝	108	112½	109	132,771	$100	do pfd.	$2Q	Nov. 15, 35	900	110⅛	109	110⅛	+ ½
22¾	15¾	30¼	15⅛	4,722,652	5	Continental Oil Co.	25c	Oct. 31, 35	68,100	*30¼	26½	29⅞	+ 2¼
23⅛	12	22½	11¾	413,333	$10	General Asphalt Co.	....	.....	9,100	21½	20	20⅝	+ ⅛
29¾	12⅛	17¾	9⅛	95,841	100	Houston Oil Co.	....	.....	.....	.....	.....	.....	.....
5⅜	2⅛	7	1⅛	678,234	25	do v.t.c.	....	.....	50,300	7	6	6¾	+ ⅝
4¾	2⅝	3¼	2⅛	1,207,132	10	Indian Refining Co.	....	.....	900	3⅛	3	3⅛	— ⅛
3⅝	⅝	1⅞	⅝	1,309,060	N.P.	Louisiana Oil Ref'g. Corp.	....	.....	10,200	1¼	1	1⅛	0
23⅛	7¼	15	4½	40,000	$100	do pfd.	....	.....	830	*15	12½	14	+ ½
3¼	1⅛	3	1	330,000	N.P.	Maracaibo Oil Exploration Co.	....	.....	1,800	2½	2⅜	2½	+ ¼
14⅝	9⅛	17¼	9¼	1,857,912	$10	Mid-Continent Pet. Corp.	25c	Dec. 2, 35	29,190	*17¼	15½	17	+ 1⅛
15⅞	8⅛	14⅛	9¼	6,563,377	N.P.	Ohio Oil Co.	15c	June 15, 35	42,200	12	10⅞	12	+ 1
11⅛	10¾	12	10¾	4,699,885	$5	Pan Amer. Pet. & Transp. Co.	....	.....	.....	.....	.....	.....	.....
2⅛	⅝	1⅞	⅛	199,370	N.P.	Panhandle Prod. & Ref'g. Co.	....	.....	5,100	*1⅞	1½	1¾	+ ⅜
21⅛	7	20	6⅛	17,994	$100	do pfd.	....	.....	310	19½	18	18¼	+ ¼
14¼	8¼	12	7⅜	2,153,444	5	Petroleum Corp. of America	33c	Oct. 31, 35	14,200	*12	11¼	11⅞	+ ⅝
20¾	13⅜	37⅝	13¾	4,439,450	N.P.	Phillips Petroleum Co.	25cQC	Nov. 30, 35	67,100	37½	34	37	+ 3⅛
1⅛	⅝	1¼	¼	1,184,817	$25	Pierce Oil Corp.	....	.....	10,400	1	⅞	1	— ⅛
10¾	4½	8	2¾	150,000	100	do pfd.	....	.....	1,100	7¼	6½	6⅞	— ⅛
2	¾	1½	⅝	2,500,000	N.P.	Pierce Petroleum Corp.	....	.....	11,900	1½	1⅜	1½	+ ⅛
16¾	7¼	12¼	6⅛	1,050,000	$5	Plymouth Oil.	25cQ	Mar. 30, 35	9,200	12	11	11⅝	+ ½
14⅞	6⅛	14¾	5⅞	3,038,370	N.P.	Pure Oil Co.	....	.....	95,900	*14⅜	12⅜	14⅜	+ 2¼
63	33½	99½	34¾	167,640	100	do 6% pfd.	....	.....	1,400	97½	93	97½	— ½
80	49	116	49⅝	130,000	$100	do 8% pfd.	....	.....	650	116	114¾	116	0
39⅛	28⅝	48⅜	29⅛	425,342	a	Royal Dutch Co. (N. Y. shares)	$1.70	Aug. 1, 35	1,000	47½	46⅞	47½	— ⅞
38⅝	20¾	35⅞	20¾	1,244,383	N.P.	Seaboard Oil of Del.	25cQ	Sept. 15, 35	7,400	32⅜	29¾	32¼	+ 2
26½	19	38⅝	20⅜	56,148	£2	Shell Transport & Trading Co.	$1.237	July 24, 35	190	38⅝	38½	38½	0
11½	6	15¼	5⅛	13,070,625	N.P.	Shell Union Oil Corp.	....	.....	43,100	*15¼	13⅜	15	+ 1⅛
89	57	111	63⅛	400,000	$100	do pfd w.w.	....	.....	2,300	110	105½	110	+ 4
17⅛	7¼	18¾	4⅞	461,000	10	Simms Petroleum Co.	**$1.25	Oct. 18, 35	4,600	5¼	5	5⅛	+ ⅛
11¾	6	17	6⅛	1,100,069	25	Skelly Oil Co.	....	.....	6,400	16⅜	15½	16⅜	+ ⅝
68⅝	51⅛	111	60	120,000	100	do pfd.	....	.....	500	110	107	110	— 1
19⅞	12⅛	15¾	10⅝	31,701,348	15	Socony Vacuum Oil Co.	15c	Sept. 16, 35	151,500	13⅞	12½	13⅞	+ 1⅛
114	96½	116	111	764,925	100	S. O. Export Corp. pfd.	$2.50S.A.	June 29, 35	500	113¼	112¾	113	— ½
42⅞	26½	38⅞	27¾	13,102,900	N.P.	S. O. California.	25cQ	Sept. 16, 35	43,900	38¾	36¼	38¼	+ 1⅝
32¾	23¼	28¾	23	15,215,677	$25	S. O. Indiana.	25c	Sept. 16, 35	31,700	27¾	26⅛	27⅜	+ ⅝
41	26	32	20	146,542	10	S. O. Kansas.	50c	Oct. 31, 34	400	28	27½	28	+ ¼
50⅜	39¼	50⅛	35⅝	25,740,965	25	S. O. New Jersey.	50c a.a.	June 15, 35	60,700	49⅜	47½	49	+ ⅜
74¼	51½	77	60½	1,590,406	N.P.	Sun Oil Co.	25cQ	Sept. 16, 35	1,600	72½	71	71⅜	— ¾
118	100	121	115½	100,000	$100	do pfd.	$1.50Q	Dec. 2, 35	210	120½	119	120½	+ 2
3	1¼	3	1⅝	966,979	$1	Superior Oil Corp. (Del.)	....	.....	37,000	3	2⅝	2⅞	+ ⅛
29⅛	19⅝	25⅝	16⅛	9,851,236	$25	The Texas Corp.	25cQ	Oct. 1, 35	51,300	*25⅝	24	25½	+ 1¼
6⅛	2½	9¼	3¼	930,570	10	Texas Pacific Coal & Oil Co.	....	.....	17,000	8⅞	8	8⅝	— ⅛
14⅜	8	12⅜	7⅝	5,998,919	N.P.	Tide Water Associated Oil Co.	....	.....	29,100	12¼	11	12⅛	+ ⅞
87	64½	104½	84	695,503	$100	do pfd C. T. V.	$1.50	Oct. 1, 35	200	102	101½	101½	— ½
40	24	43½	26⅝	2,191,823	N.P.	Tide Water Oil Co.	50c	Sept. 30, 35	360	41¾	40	41¾	— 1¾
20⅛	11⅛	22	14⅜	4,386,070	25	Union Oil of California.	25cQ	Nov. 9, 35	24,900	*22	20⅛	22	+ 2
25¾	15⅝	26½	20¼	1,200,000	N.P.	Union Tank Car Co.	30cQ	Dec. 2, 35	2,000	23	22	23	+ ¾
3⅛	1	1⅜	⅝	759,538	N.P.	Warner Quinlan Co.	....	.....	13,600	1⅝	1⅛	1½	+ ¼
5¾	2	2⅞	1	431,443	$5	H. F. Wilcox Oil & Gas Co.	....	.....	2,400	2⅝	2⅜	2⅝	+ ⅛

*New high. †New low. x Ex-div. **Dividends of liquidation. ‡Stock dividend. a Par 33 1/3 florins.
C Paid 25c extra Nov. 30, 35.

Standard Oil Stocks on New York Curb Market

1934 High	1934 Low	1935 High	1935 Low	Shares Issued	Par Value	Company	Current Dividend	Last Div. Paid	Transactions Week Ended Dec. 7 Sales Shares	High	Low	Last	Week's Change
11	6	11½	6	56,000	$25	Borne Scrymser Co.	50c	Oct. 15, 35	400	*11½	10¼	11½	+ 1¼
38	26	42⅓	30⅓	200,000	50	Buckeye Pipe Line Co.	75cQ	Sept. 14, 35	200	40¾	40	40¾	+ ¼
150	116	157	115	120,000	25	Chesebrough Mfg. Co.	$1.50	Sept. 27, 35	300	126	124⅛	125	+ 1½
14⅛	9⅛	23¾	10	5,977,873	N.P.	Creole Petroleum Co.	....	.....	.....	.....	.....	.....	.....
37	30	38	33¼	50,000	$50	Eureka Pipe Line Co.	$1Q	Nov. 1, 35	100	38	37	38	+ 1
49⅛	33¼	64	44	8,968,479	N.P.	Humble Oil & Refg. Co.	25cQ	Oct. 1, 35	12,800	60¾	57¼	59⅜	+ 1¼
17⅞	12⅝	22⅛	15⅝	26,919,871	N.P.	Imperial Oil Ltd.	‡25cS.	Dec. 2, 35	13,400	20⅛	19¾	20⅛	+ ⅛
17⅝	12⅝	22⅛	16⅛		N.P.	do registered.	25cQ	June 1, 34	1,200	20⅛	19¾	19⅞	— ⅛
6½	3¾	6½	3⅝	300,000	$10	Indiana Pipe Line Co.	20c **	Nov. 15, 35	400	5⅝	5⅝	5⅝	— ⅜
33⅜	19⅜	39⅜	28	14,324,088	N.P.	International Pet. Co.	‡75cS.	Dec. 2, 35	12,700	36¼	34⅛	35½	+ ⅝
9½	7	10½	6¾	509,000	$12.50	National Transit Co.	35c	Dec. 15, 34	400	9½	9⅛	9½	+ ¼
4¾	3	4⅛	3	100,000	5	New York Transit Co.	15c S.A.	Oct. 15, 34	400	4⅝	4½	4⅝	+ ⅛
7	4⅛	8	5¼	120,000	10	Northern Pipe Line Co.	25c S.A.	July 1, 35	.....	.....	.....	.....	.....
91	83⅓	107¼	90¼	562,122	100	Ohio Oil Co. pfd.	$1.50Q	Sept. 14, 35	400	103¼	102¾	103¼	+ 1¼
8⅛	3⅛	11	5⅞	400,000	25	Penn Mex. Fuel Co.	....	Dec. 22, 33	.....	.....	.....	.....	.....
5½	3½	5	3⅞	100,000	10	Southern Pipe Line Co.	15c	Sept. 3, 35	100	4⅝	4⅝	4⅝	0
26½	17½	32	21⅝	1,200,000	25	South Penn Oil Co.	30c	Sept. 30, 35	1,500	*32	30	32	+ 2⅛
47	41	54¾	45¼	35,000	50	South West Pa. Pipe Lines.	$1Q	July 1, 35	250	*54¾	53	54¾	+ 5¾
18⅛	14⅝	24	18	2,604,790	10	S. O. Kentucky.	25c	Sept. 14, 35	2,900	21¾	21⅛	21¼	— ⅜
16⅞	8¼	12	7¾	188,403	25	S. O. Nebraska.	....	June 20, 34	500	11⅝	11	11½	+ ¼
28½	12⅝	23⅛	11½	753,740	25	S. O. Ohio.	....	Apr. 16, 34	4,200	22¾	19⅞	22¾	+ 2
95	77½	99½	91	120,000	100	do 5% pfd.	$1.25Q	Oct. 10, 35	100	93	92	92	— 2
4¼	2⅝	6	2¼	34,158	25	Swan Finch Oil Corp.	....	Dec. 1, 30	100	5⅛	5⅛	5⅛	— ⅛

*New high. †New low. ‡Imperial Oil Spec. 37½c Dec. 2, 35. International Pet. Spec. 50c Dec. 2, 35.
x Ex dividend.
**15c regular; 5c extra.

South Penn Oil Co.

Reflecting better earnings, South Penn Oil Co., one of the leading producers and purchasers of crude oil in Pennsylvania, West Virginia, southeastern Ohio, and New York, has twice increased the rate of quarterly dividends paid stockholders this year. The distribution for 1935 totals $1.35 a share, highest since 1930, compared with $1.20 in 1934. The company paid two dividends of 30 cents each, one of 35 cents, and one of 40 cents.

For the first six months of this year, the company reports net income of $982,335, after depreciation, depletion, development expenses, taxes, etc. This is equal to 82 cents a share on 1,200,000 shares of $25 par value capital stock. In the same period of 1934, income was $838,506 or 70 cents a share.

The report is consolidated with its subsidiary Glayco Gas Co. South Penn's 51 per cent interest in Pennzoil and 50 per cent interest in Bradford Transit Co., operator of gathering lines, is carried as an investment.

Oil and Royalty Stocks on New York Curb

1934 High	1934 Low	1935 High	1935 Low	Par Value	Company	Transactions Week Ended Dec. 7 Sales Shares	High	Low	Last	Week's Change
1 1/16	1/16	11/16	5/16	N.P.	American Maracaibo	1,900	1/2	5/16	5/16	— 1/16
2 3/8	1	3 3/4	6/8	N.P.	Arkansas Nat. Gas	9,200	*3 3/8	2 5/8	3 3/8	+ 1/2
2 3/8	5/8	3 3/8	5/8	N.P.	do A	52,800	*3 3/8	2 1/2	3 3/8	+ 5/8
3 3/8	1 3/4	7 1/8	2 1/4	$10	do pfd	10,500	*7 1/8	6 1/2	7 1/8	+ 3/8
5 1/8	12 3/4	16 1/4	14 1/2	N.P.	British Amer. Oil coup.	300	16 1/8	16	16 1/8	+ 1/8
5 1/8	1 1/2	4 1/4	1 1/2	$1/4	Carib Syndicate	23,900	3 1/8	2 7/8	3	— 1/8
4 1/8	1 1/4	3 1/4	3/4	N.P.	Cities Service	46,800	2 3/4	2 1/2	2 5/8	0
6 1/8	11 1/4	1 1/2	6 1/4	$100	do pfd	1,700	28 3/4	25 7/8	28 1/2	+ 2 1/2
2 1/8	1 1/4	3 3/4	5/8	10	do pfd. B	100	2 7/8	2 7/8	2 7/8	0
3 1/8	9	30	6	100	do pfd. BB	.....	....	....	....	....
3 1/4	1/8	2 1/16	5/16	N.P.	Colon Oil Corp.	6,600	1	7/8	7/8	— 1/16
1 3/4	3/8	1 1/8	1/8	N.P.	Columbia Oil & Gas vtc.	4,200	3/4	5/8	3/4	— 1/8
2	1 1/8	3	1	$1	Consolidated Royalty	1,000	2 1/4	2	2	— 1/4
3 1/8	1/2	1 1/2	1/4	N.P.	Cosden Oil	26,700	*1 1/2	9/16	1 3/8	+ 1/16
9	2 1/8	4 1/8	1	$100	do pfd	2,500	*4 1/8	1 1/2	3 1/2	+ 1 1/8
1 1/8	3/4	1 5/8	5/8	N.P.	Crown Central Pet.	20,700	*1 5/8	1 1/2	1 1/2	0
7 1/8	4 1/8	8 1/8	4	N.P.	Darby Petroleum	2,500	*8 1/8	6 5/8	8 1/8	+ 1 5/8
2 1/8	1	2	3/4	N.P.	Derby Oil & Refg.	300	1 5/8	1 5/8	1 5/8	0
....	....	20	20	N.P.	do pfd	.....	....	....	....	....
76 1/4	50	74 3/4	50 1/4	$25	Gulf Oil Corp.	19,300	71 1/4	68 1/2	70 1/4	+ 3/4
4 1/8	1 1/4	4 1/4	1 1/8	N.P.	Indian Ter. Illg. Oil A	900	2 7/8	2 1/2	2 7/8	+ 3/8
4 1/8	1 1/4	4 1/4	1 1/8	N.P.	do B	2,400	3	2 5/8	2 7/8	+ 3/8
3	1 1/8	3	1 1/8	N.P.	Kirby Petroleum	1,300	2 7/8	2 3/4	2 3/4	— 1/8
1/8	1/16	3/16	1/16	$25	Leonard Oil Dev.	8,900	5/8	1/16	1/2	— 1/16
6	3 1/8	7 3/4	3 1/8	N.P.	Lion Oil Refg.	2,700	*7 3/4	6 1/2	7 3/4	+ 1 1/4
8 3/4	4 1/4	10 1/8	4 1/8	N.P.	Lone Star Gas	6,500	10	9 3/8	10	+ 1/2
8 3/4	5 1/4	19	4	N.P.	Margay Oil Co.	.....	....	....	....	....
2 1/4	1	2 3/4	7/8	N.P.	Mexico-Ohio Oil	.....	....	....	....	....
5	2 3/8	3 3/8	1 1/8	N.P.	Michigan Gas & Oil	2,700	2 3/4	2	2 5/8	— 1/4
2 3/8	1	3 7/8	1/8	N.P.	Mid. States Pet. A vtc.	4,500	*3 7/8	3 3/8	3 5/8	+ 1/8
1 1/16	1/16	1/8	1/16	N.P.	do B vtc.	3,300	1/8	1/8	1/8	+ 1/16
1/8	1/16	1/8	1/16	$1	Mountain & Gulf	2,000	1/8	1/16	1/8	+ 1/16
5 1/8	4	5 1/8	4 1/8	10	Mountain Producers	2,900	5 1/2	5 1/8	5 3/8	+ 3/8
18 3/8	1/8	20	13 1/2	N.P.	National Fuel Gas	7,300	19 1/2	19 1/2	19 3/8	+ 3/8
2 3/8	1 3/4	3 1/4	2	$5	New Bradford Oil	2,500	3 1/8	3	3 1/8	+ 1/4
3 3/8	1 3/4	4	2	N.P.	North Central Texas	100	3 1/2	3 1/2	3 1/2	— 1/8
1/16	1/16	1/16	1/16	N.P.	North European	10,600	3/8	1/16	1/16	— 1/16
10 1/8	8 1/4	12 1/8	9 1/8	N.P.	Oil Stocks Ltd. A	500	12 1/8	12 1/8	12 1/8	0
2 3/8	1/8	4 3/8	1 1/4	N.P.	Pantepec of Venezuela	126,100	*4 3/8	3	4 1/8	+ 1
1/4	1/8	1/4	1/8	N.P.	Producers Royalty	3,600	1/4	1/16	1/4	0
53	33 1/2	70	34 3/4	$100	Pure Oil 6% pfd	.....	....	....	....	....
1 1/8	3/4	3 3/4	1/2	N.P.	Red Bank Oil	700	*3 3/4	3 1/2	3 1/2	— 1/4
1	1/8	1/4	1/8	N.P.	Reiter-Foster Oil	2,300	1/4	3/16	1/4	+ 1/16
4	1/8	1 1/8	1/2	$25	Richfield Oil pfd	1,200	1	3/4	1	+ 1/4
1 1/8	1/4	4 1/8	1	..	Root Petroleum	5,700	4 3/8	3 5/8	4 3/8	+ 3/8
8 1/8	3 1/2	13	4	10	do conv. pr. pfd	200	*13	12 1/4	13	+ 1 1/2
....	....	....	....	$10	Royalty Corp. pfd	.....	....	....	....	....
3 1/8	7/8	1 3/4	5/8	N.P.	Ryan Consolidated	700	*1 3/4	1 1/4	1 3/4	+ 3/4
1	1/8	1	1/8	$10	Salt Creek Consolidated	200	1/8	1/8	1/8	0
7 1/8	5	7 1/8	5 1/8	10	Salt Creek Prod.	2,800	7	6 5/8	7	+ 1/2
6	4 7/8	6 7/8	4 3/4	N.P.	Southland Royalty	1,600	6 1/2	6 1/8	6 1/8	— 1/4
2	1/8	2 7/8	1/8	$5	Sunray Oil	7,200	2 5/8	2 5/8	2 1/2	+ 1/8
....	....	3 1/2	2	$1	Swiss Oil Corp.	12,800	*3 1/2	2 3/4	3 3/8	+ 1/2
11	4 1/8	6 1/8	5	N.P.	Texon Oil & Land	5,900	6 1/2	6	6	0
1 1/8	1/8	4	1/8	$5	Venezuela Petroleum	200	*4	3 1/4	4	+ 1
5 1/4	2 3/4	6 1/4	3 1/8	1	Woodley Petroleum	700	5 1/2	5 1/4	5 3/8	0

*New high. †New low.

New York Bonds

Week Ended Dec. 7

	High	Low	Last	Change
Atlantic Refg. deb. 5s	106 1/8	106	106	— 1/8
Houston Oil 5 1/2s	101	100	100 3/4	+ 3/4
Pan Amer. Pet. of Calif. 6s	40 1/2	40	40	— 1/2
Pan Amer. Pet. of Calif. 6s ctfs	40 1/4	39 1/4	40	— 1/8
Pure Oil 4 1/4s	108 3/4	105 3/4	108 1/4	+2
Richfield Oil of Calif. 6s	32	30 3/8	32	+1
Richfield Oil of Calif. 6s ctfs	31 3/4	30	31 1/2	+1 1/2
Shell Union Oil 5s	103 5/8	102 3/8	102 7/8	— 3/8
Shell Pipe Line 5s '52	105	104	104 1/2	+ 1/4
Skelly Oil 5 1/2s	102 7/8	102 1/2	102 7/8	+ 3/8
Socony-Vacuum 3 1/2s '50	103 3/8	102 7/8	103 3/8	+ 1/2
Union Oil of Calif. 6s A	120	118 1/4	120	+1 1/4
Warner-Quinlan 6s	28 5/8	25	28 5/8	+2 5/8

New Oil Company Formed

CLEVELAND, Dec. 10—The Dearborn Petroleum Co. has been formed here to sell motor oil to Ford distributors under the brand name V8 Motor Oil. W. M. Gall is president, S. R. Sague is vice-president, and C. O. Maus, sales manager. Offices are in the Hanna Bldg.

Cushman at Rochester

DES MOINES, Dec. 6.—J. M. Cushman, Des Moines jobber who has been ill for several months, is confined to St. Mary's hospital at Rochester, Minn.

Pittsburgh Stock Exchange

Transactions Week Ended Dec. 6, 1935

	Sales	High	Low	Last	Change Over Week
Ark. Nat. Gas	300	3	2 5/8	3	+ 1/8
do pfd	599	7	6 3/4	7	+ 1/2
†Cities Serv.	87	2 3/8	2 1/4	2 1/4	0
Col. Gas & Elec.	1,225	14 3/8	12 3/8	14 1/4	— 3/8
Devonian Oil	124	16 1/4	15 5/8	16 1/4	+ 1/2
Lone Star Gas	3,177	10	9 1/2	9 7/8	0
† do 6 1/2 p.c. pfd.	155	109 1/2	109	109 1/2	+ 1/2
Mountain Fuel Supply	1,806	4 7/8	4 3/4	4 3/4	— 1/4
Plymouth Oil	7	11 1/8	11 1/8	11 1/8	— 3/4
Shamrock Oil & Gas	5,570	2 3/4	2 1/8	2 3/4	+ 1/2
†Standard Oil of N. J.	340	49 5/8	47 7/8	49	+ 3/4

†Unlisted.

Cleveland Stock Exchange

Transactions Week Ended Dec. 7, 1935

	Sales	High	Low	Last	Change Over Week
Canfield Oil	....	....	....	....	....
Nat'l Refining	42	5	5	5	0
do pfd	....	....	....	....	....

New York Curb Bonds

Week Ending Dec. 7

	High	Low	Last	Change
Cities Serv. 5s '50	68	64 1/8	67 1/8	+2 7/8
Cities Serv. 5s '66	67 1/2	64	67	+1
Cities Serv. G. 5 1/2s '42	94 3/4	93 3/4	94	— 5/8
Empire O & R 5 1/2s '42	79 1/2	76	78 1/4	+ 1/4
Gulf Oil 5s '47	107	106	106	—1
Valvoline Oil 7s '37	97	97	97	0

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Gasoline Demand Rises 6.15% In First Nine Months

NEW YORK, Dec. 9

GASOLINE consumption in the United States in the nine months ended September this year increased 760,534,000 gallons, or 6.15 per cent over consumption in the corresponding period of last year, according to tax reports filed by wholesalers and dealers in the various states, the American Petroleum Institute says.

Every state indicated a gain in demand in this period, ranging from 0.14 per cent in Arkansas, to 24.62 per cent in North Dakota. Average gains by percentages in the various sections of the country were: New England, 4.16 per cent; Middle Atlantic states, 6.67 per cent; southeastern, 10.15; middle west, 7.63; southwest, 4.80; Rocky Mountain, 9.95; and Pacific Coast, 6.76 per cent.

Daily average demand in the first nine months this year was 48,074,000 gallons, compared with daily average of 45,288,000 gallons last year, a gain of 2,786,000 gallons.

During September gasoline demand reached 1,603,291,000 gallons, an increase of 113,613,000 gallons, or 7.63 per cent over September a year ago. Four states indicated decreases, these being Colorado, with a decrease of 9.20 per cent; Maine, 2.05 per cent; New York, 1.18; and Texas, 0.36 per cent. Increases in this month's ranged from 0.30 per cent in Delaware to 38.62 per cent in Wyoming.

Detailed figures are given in the accompanying table.

Gasoline Consumption By States, September, 1935

(Figures in Thousands of Gallons)

	Month of				9 Months Ended With		
	Aug., 1935 Gallons	Sept., 1935 Gallons	Sept., 1934 Gallons	% Change 1935 over 1934	Sept., 1935 Gallons	Sept., 1934 Gallons	% Change 1935 over 1934
Alabama	15,959	14,971	13,583	+10.21	125,392	113,471	+11.39
Arizona	6,966	6,703	6,064	+10.54	59,276	54,180	+9.40
Arkansas	13,705	12,723	12,706	+0.13	103,955	103,806	+0.14
California	128,854	134,162	106,319	+26.19	1,092,955	998,436	+9.47
Colorado	19,334	17,329	19,075	—9.20	138,481	130,854	+5.83
Connecticut	29,341	25,735	24,893	+3.39	201,999	191,072	+5.67
Delaware	5,115	3,990	3,978	+0.30	33,553	31,167	+7.64
District of Col.	10,488	9,692	8,959	+19.15	83,400	76,989	+8.33
Florida	19,673	18,134	16,883	+7.38	194,343	173,877	+11.77
Georgia	24,322	22,109	23,169	+9.62	195,042	174,951	+11.48
Idaho	8,754	7,741	6,598	+17.32	53,899	49,845	+8.13
Illinois	103,917	95,309	92,040	+4.63	794,622	762,485	+4.21
Indiana	48,589	47,394	44,939	+5.34	379,365	344,211	+7.60
Iowa	41,821	40,013	37,900	+5.14	314,370	299,523	+4.96
Kansas	40,559	40,759	32,702	+24.64	318,322	290,250	+9.67
Kentucky	20,163	18,551	16,856	+10.05	149,415	135,638	+9.35
Louisiana	16,915	15,892	14,992	+6.00	134,613	130,109	+3.46
Maine	16,245	12,497	12,759	—2.05	93,872	88,773	+2.35
Maryland	22,110	19,400	17,980	+7.90	161,255	152,477	+5.76
Massachusetts	63,942	57,784	52,330	+10.42	455,800	437,459	+4.19
Michigan	84,719	78,265	76,101	+2.84	637,666	596,134	+6.97
Minnesota	50,139	45,709	40,915	+11.72	341,951	321,560	+6.34
Mississippi	13,592	12,785	11,217	+13.98	107,760	95,559	+12.77
Missouri	50,224	47,037	41,557	+13.19	376,950	364,485	+3.42
Montana	12,085	9,264	7,595	+21.97	73,615	65,489	+12.40
Nebraska	22,295	20,058	18,568	+8.02	168,998	168,734	+0.16
Nevada	2,912	2,683	2,372	+13.11	20,186	18,652	+8.22
New Hampshire	9,905	7,365	7,282	+1.14	56,207	53,955	+4.17
New Jersey	69,411	65,184	64,702	+0.74	546,789	530,316	+3.11
New Mexico	6,636	5,757	5,460	+5.44	46,431	41,087	+13.01
New York	170,060	143,221	144,938	—1.18	1,202,549	1,179,758	+1.93
North Carolina	28,880	27,745	24,216	+14.57	224,275	198,823	+12.80
North Dakota	13,482	13,903	9,394	+48.00	95,347	76,508	+24.62
Ohio	96,332	93,015	85,223	+9.14	757,638	714,627	+6.02
Oklahoma	30,584	29,572	27,229	+8.60	244,452	227,056	+7.67
Oregon	19,162	17,733	16,517	+7.36	137,133	127,903	+7.22
Pennsylvania	114,789	102,936	101,099	+1.82	871,699	844,370	+3.24
Rhode Island	12,235	10,080	9,686	+4.07	85,357	81,953	+4.15
South Carolina	13,240	12,171	10,986	+10.79	116,723	96,530	+10.56
South Dakota	12,094	11,541	10,223	+12.89	92,209	81,162	+13.61
Tennessee	21,612	20,268	19,398	+4.48	165,913	156,213	+6.21
Texas	88,560	78,630	78,918	—0.36	697,269	645,956	+7.94
Utah	7,369	6,552	5,994	+9.31	52,617	48,452	+8.60
Vermont	6,731	5,288	5,239	+0.93	38,157	36,539	+4.43
Virginia	27,365	24,796	22,289	+11.25	208,801	191,235	+9.18
Washington	28,725	26,941	23,296	+15.65	206,759	199,610	+3.58
West Virginia	15,893	14,604	13,893	+5.12	(a)118,385	108,535	+9.07
Wisconsin	47,622	42,468	41,109	+3.30	331,156	318,260	+4.05
Wyoming	6,072	5,940	4,285	+38.62	38,387	33,669	+14.01
Total	1,744,505	1,603,291	1,489,678	+7.63	13,124,237	12,363,703	+6.15
Daily Average	56,274	53,443	49,656	+7.63	48,074	45,288	+6.15
Change from previous year:							
Total Change		+113,613			+760,534		
Percentage Change in Daily Average		+7.63%			+6.15%		

(a) July 1935 gallonage revised to 14,741,000.

New Oil Institute Members

NEW YORK, Dec. 3.—Five companies have just been elected to membership in the Oil Burner Institute, according to a recent announcement.

The new members are: Minneapolis. Honeywell Regulator Co., Minneapolis, Minn.; Preferred Utilities Manufacturing Corp., New York City; Mercoid Corp., Chicago; Eddington Metal Specialty Co., Eddington, Penn.; and Penn Electric Switch Co., Des Moines, Iowa.

Germany's Motor Fuel 40 Per Cent Domestic

WASHINGTON, Nov. 29.—By compulsory use of its own natural resources to produce gasoline substitutes, Germany has reached a point where 40 per cent of its motor fuel requirements are now supplied from domestic sources, according to the Commerce Department's chemical division.

A decree has been issued requiring all large municipal gas-works to recover as much by-product benzol as possible from their operations. Recent months have witnessed a series of installations of new benzol recovery equipment or resumption of operations of old plants which have been idle for years, it was said.

In 1934, benzol production exceeded 300,000 metric tons—not including the Saar output, about 280,000 tons of which was used for motor fuel. Production during the year is expected to be substantially higher. Besides, Germany now has access to Saar benzol amounting to 30,000-40,000 metric tons annually.

Germany's production of "synthetic gasoline" from coal and brown-coal, of which the country has large resources, was running at the rate of 220,000 metric tons at the beginning of 1935 but is now expected to reach 350,000 tons for the whole year, the report added.

For several years the use of alcohol as a mixture with gasoline has been compulsory in Germany, the required blend now being ten per cent. Approximately 170,000 tons of alcohol, made chiefly from potatoes, were consumed in motor fuel mixtures last year, it was estimated.

Other motor fuel substitutes including methane, propane, butane, illuminating gas and charcoal are also used to some extent in German motor cars, according to the report.

Nourses on World Trip

KANSAS CITY—Mr. and Mrs. Jack Nourse, Nourse Oil Co., Kansas City, are planning to sail from the West coast Jan. 5 for the Orient. The trip around the world is expected to take about six months.

Oil Marketing Today

"Pete Roleum" is a well enough known character out in the west, it seems to us, to permit of the printing of the following "poem" in regard to the predicament of the jobber and the majors these days. "Pete," even though his meter may be a little lame from weariness and his rhyme not quite perfect, we know does express thoughts that are in the minds of many jobbers—Editor.

Take a seat here buddy
And to you I'll now recite,
The inside about oil marketin'
Which is a damn gory sight.

Now, some companies, known as Majors,
Whoop her up an' fuss an' shout
Jest to camouflage th' issues
An keep th' truth from gettin' out.

Gawd, some deals these Majors pull,
Th' things their agents do
Are ten times worse than ever done
By ruthless Dangerous Dan McGrew.

Th' Major blames some honest jobber,
Then up an' cuts th' price t' hell
To bring about conditions that t'
Th' high heavens smell.

When th' little honest jobber
Asks th' lordly Major why,
Th' only satisfaction given
You could put right in your eye.

Th' Majors says, "we had th' evidence,
Th' so-an'-so cut prices first,"
Then in a rage of red eye anger
This mighty one will burst.

When one asks t' see th' evidence,
Be it affidavit, ticket or note,
Th' Major holds close t' his belly
An' claims it's strictly private dope.

Th' high an' mighty Major
Sets himself up as judge an' jury
An' because th' honest jobber doubts him
He breaks out in a fury.

Then th' little honest jobber,
Who is thus so accused,
Denies th' charge or charges
An' th' Major seems much amused.

Th' reason for th' Major's attitude
Is known damn jolly well.
Th' evidence so dearly held
Is often twice as false as hell.

It's come t' be a well known fact
That much evidence so gotten
Was sworn lies, false statements,
An' other things quite rotten.

Thus it is, th' markets are depressed,
So often without any reason
An' th' very worst of all,
It's done season after season.

Cut out th' damn foolishness,
Prays th' little honest jobber,
Let th' Major get religion
An' be no longer crook or robber.

Then bring about a cure
Since many feel that way,
When th' market is depressed
Cut th' commission agent's pay.

—Pete Roleum—

Iowa Jobbers to Meet

DES MOINES, Dec. 5.—The annual convention of the Iowa Petroleum Association will be held in Des Moines Feb. 18 and 19 at the Hotel Fort Des Moines, M. L. Long, association secretary, has announced. Exhibits are to be in place Feb. 17, and many spaces have been reserved already.

This new 2-ton light fuel oil tank truck is the third unit to be placed in service by the Capitol Tire & Rubber Co., Inc., of Roxbury, Mass. This truck has a capacity of 1046 gallons, has three compartments, and is full-skirted. All trucks are equipped with meters, and are kept in first-class appearance by liberal and frequent applications of paint

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